

SELF-IDENTIFIED REASONS FOR HEALTH BEHAVIOR CHANGE--
IMPLICATIONS FOR EDUCATORS

By

MARY CATHERINE SMOLENSKI

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Abstract of Dissertation Presented to the Graduate School
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Mary Catherine Smolenski

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The purpose of this study was to examine the self-identified reasons individuals perceived as helping or hindering them in making health behavior changes after a risk assessment. A corporation in the Southeastern United States contracted with a community hospital for health risk assessment services for its employees. Forty-six employees identified as being at risk were interviewed by telephone eight months later with a twelve-question interview protocol developed by the researcher. The sample contained 30 males and 16 females, 59% Caucasian, with the most frequent age range being 31-40.

A statistical difference was found between the responses of males and females as to whether the workplace

affected their health behaviors (Chi-square - sig. $p < .05$). Only 61% of the men said yes as opposed to 89% of the women. Seventy-three percent of individuals felt their place of employment affected their health behaviors with 47% identifying a negative effect.

Most individuals took the risk assessment to evaluate their health status with 1/3 receiving results they did not expect. Seventy-four percent felt the assessment helped them, but 50% wanted more information on how to correct the problems identified.

Eighty percent identified someone who had an impact on their health behaviors with support as the most important method of impact. In addition, sixty-seven percent identified events affecting their health behavior, with tragic events identified most often and the majority of events perceived as helpful (including events identified as tragic).

Pride and self-image were identified most frequently as helping behavior change. Health, seeing positive results, and support were identified most frequently as incentives for health behavior change. No respondents rated themselves unhealthy.

In summary, there is considerable variability in the reasons people identify for making health behavior changes, and it is important for educators to recognize these individual differences when working with clients.

CHAPTER 1

INTRODUCTION

Health educators have welcomed the advent of health risk assessment instruments, but also have been frustrated by not understanding why some clients respond to the assessment with health behavior changes and others do not. The purpose of this study was to learn from such clients their reasons for making or not making health behavior changes in response to a health assessment. A better understanding of health self-improvement motives is seen as a foundation for improved health instruction.

Background of the Problem

As medical science has become more adept at eradicating communicable diseases and treating other disease processes, there has been a definite turn toward investigating ways to promote physical well-being. The "medical" industry has become the "health care" industry. The semantics of health care have changed from illness-oriented to wellness-oriented. Even psychology has added a specialized area to the disciplines, that of health psychology, a part of the behavioral medicine school

(Feuerstein, Labbe & Kuczmierczyk, 1986). This shift has been a welcome event for nursing, where a major emphasis has long been on caring, wellness, and health education.

By the early sixties, the science of epidemiology became sophisticated enough to attempt predicting longevity based on family history and health habits using the concept of "risk factors." The Framingham study was one of the first major research efforts to examine "risk factors" and how individuals could alter their health behaviors to modify their calculated "risk" (Kannel & Schatzkin, 1983). The Multiple Risk Factor Intervention Trial (MRFIT) was another study undertaken to look at alteration of risk factors and the beneficial effects on the individual (Stamler, 1985-1986). The importance of identifying risk factors was emphasized in 1979 by the Surgeon General, who estimated that half of the deaths in the United States in 1976 were due to unhealthful behaviors or general lifestyle factors. He further declared the beginning of the second great public health revolution--the era of health promotion (Orlandi, 1987).

Health Risk Appraisal (HRA) is one method to assess individual risk and identify health-related educational needs. There are numerous other health risk assessments, both formal and informal, discussed in the literature and available in health care, nursing, wellness, and industrial settings (Shultz, 1984; Tulloch & Healy, 1982). Through a series of questions addressing health habits

such as smoking and exercise, family history, physical characteristics, and possibly some physiological measurements such as blood pressure and blood cholesterol, an individual's health risks can be determined. Some instruments even provide a "risk age" or "risk score." However, an HRA provides only a needs assessment, not the total program. It is a beginning step toward behavior change (Berg, 1986).

Evidence exists that the use of HRAs with clients can stimulate lifestyle changes in specific health-related areas. Studies have shown that some clients do change their exercise patterns, lose weight, increase seat belt usage, and alter alcohol consumption following a health appraisal (Milsum, 1980, 1984; Shultz, 1984). There is also evidence the HRAs improve utilization of screening procedures such as Papanicolaou smears, breast self exam, and rectal exams (Bartlett, Pegues, Shaffer, & Crump, 1983; Milsum, 1980). As Berg (1986) pointed out though, HRA is only the beginning step toward behavior change.

Wagner, Beery, Schoenbach, and Graham (1982), after reviewing 217 programs utilizing HRAs, discussed the need to identify strategies for motivating and supporting health-related behavior. They also questioned the role and impact of the health practitioner in risk reduction. More recently, Shultz (1984) found that the use of HRAs is most effective when combined with one or more of the following strategies: counseling (individual or group),

education programs, behavior modification, contracting, referral to community resources, educational materials, self-management, and mass media.

What happens after a risk assessment is administered is the important issue. Even more important is the question of why a person acts or does not act on the data provided by an HRA. What motivates one individual to make a change and another not to make a change? What causes an individual to maintain a change that has been made?

Numerous areas have been investigated to identify factors related to health behavior change. Some of these include health beliefs, locus of control, self-esteem, attitude, demographics, and health values. Unfortunately, it is also apparent that the beliefs, values, and attitudes that individuals profess do not always correlate with the actual behavior that follows. How to motivate behavior has been a concern to psychology since its beginnings. Health psychology, with its focus on the study of motivating factors for health behavior changes, is in its infancy. The literature in this field points to the need for basic, exploratory studies of the actions and events that unfold after the HRA.

Purpose

This exploratory study was designed to elicit the factors individuals perceived as influencing them to change, not change, or to maintain their health behaviors

after the administration of a health risk assessment. The purposes of this study were those identified by Hogstel and Saynor (1986) as the three general purposes of exploratory studies: 1) to discover significant variables in the field situation, 2) to discover relations among variables, and 3) to lay groundwork for later more systematic and rigorous testing of hypotheses.

Research Questions

A review of the literature on health behaviors provided a basis for the research questions investigated in the study. These included

1. Do males and females differ in the type of reaction to their risk assessment results?
2. Is there a significant difference between level of education and how an individual reacts to risk assessment results?
3. Do males and females differ in their perceptions of whether their places of employment affect their health behavior?
4. Do males and females differ in the types of individuals they identify as helping them make health behavior changes?
5. Do males and females differ in the types of events they identify as affecting their health behavior?
6. What are the internal or personal characteristics that individuals identify as helping or hindering their health behavior?

7. Are there incentives which individuals perceive as helping them make health behavior changes?

8. How do individuals rate their own health?

The research questions focused mainly on gender differences for several reasons. Much of the research related to health behaviors has been analyzed with regard to differences between males and females for many reasons such as presence of certain physical characteristics, position in the workplace, role in the family or home, diseases prevalent to one gender or the other, or health practices of one sex versus the other. Certain factors relevant to the study have already been found to be more significant for one gender or the other; for instance, the importance of exercise (Calnan, 1985). Actuarial data with regard to risk factors have focused on gender differences.

Data from questions one through five were evaluated by application of the chi-square test. The data from questions six, seven, and eight were analyzed by the process of content analysis and reported as descriptive findings. Additional responses elicited during the interview were tabulated and reported as descriptive data that could be examined for formulation of future research questions.

Significance of the Study

Nursing and other health educators are always looking for evidence of what encourages individuals to change their existing behaviors to more healthy ones or to maintain those constructive ones that already exist. Identifying these influencing factors would not only help to increase compliance in individuals who already have a health impairment, but also would provide an impetus for those who aspire to more healthy behaviors. Additional time spent in a health-related encounter could be saved if it were possible to identify an individual's personal motivators at the beginning of an encounter. An educational intervention tailored to particular personal motivators is much more likely to be effective.

Another possible application is related to the work environment. Business and industry could benefit if individuals identify factors related to the work situation as facilitators of healthy behavior. Not only could health care costs per worker be reduced, but also time lost from work could be minimized, and productivity improved. Conversely, if factors that hinder healthy behaviors are identified as related to the work setting, those employers concerned about these issues will have an idea of where to start to make changes.

Some research involving health behavior has relied on pre-established concepts such as locus of control, forced choice instruments, and fixed interpretations. Although

identification of an individual's locus of control or health beliefs is interesting and may lead to fruitful research, it is not always practical to measure these concepts in a health encounter. Time itself is usually a limiting factor, and treatment of an illness rather than education may be the priority for the visit. However it may be possible for the health provider to ask approximately ten questions as a way of identifying the factors most likely to motivate an individual to adjust their behavior (i.e., praise, peer pressure, regulations, monetary rewards).

Forced choice questions are inflexible, not sensitive to the variations in response style, and may lead the researcher to misleading or false information. They decrease, if not eliminate, the ability of respondents to formulate their own conclusions and express their own perceptions of situations or experiences. Many forced choice scales are taken out of context, forcing a decision without relation to a particular situation, when perhaps neither choice would be desirable. In contrast, this study allowed individuals to provide their own perceptions of the influencing factors that helped mobilize them to make health behavior changes or hindered them from making changes.

Methodology

The Pilot Study

A pilot study was undertaken during the first phase of this research. The objectives of the pilot study were 1) to determine the feasibility of the major study, 2) to identify the problems in the research design, 3) to refine the data collection and analysis plan, 4) to test the instrument to be used in the major study, and 5) to provide the researcher some experience with the subjects, methodology, and instruments (Hogstel and Saynor, 1986). For this pilot, the primary purpose was to refine and clarify the questions in the interview protocol so that subsequent data collection and analysis would be more effective. The pilot, development of the interview protocol, and results of the pilot are discussed in Chapter 3.

The Research Study

Subjects

Subjects for the research study consisted of a larger, more diversified group of individuals than the pilot. The sample was a convenience sample of volunteers obtained from a corporation which contracted with a small community hospital in the Southeastern United States for health assessment services. The number of subjects in the sample was 61, with 46 actually surveyed.

The subjects had been identified as being at risk for cardiovascular disease based on the hospital's own

criteria. These criteria include being overweight by forty pounds or more, having a diastolic blood pressure above 100, a systolic blood pressure above 180, a blood glucose above 150, anemia, blood cholesterol greater than 250, and a cholesterol ratio greater than 10. If an individual possessed any one or more of these criteria, he or she was included in the sample. The risk assessment tool used for the research subjects was an interview protocol developed by the hospital administering the assessment. A copy of this instrument is available as Appendix A. It is comprised of a health history form, a health screening form with an individualized recommendations section, an ancillary test results form, and an informed consent and release statement. It is the researcher's assumption that the specific form of the HRS did not influence the respondent's answers to the interview questions unless there was specific reference to the assessment tool.

Interview questions

The revised interview protocol from the pilot was administered to the research subjects. A complete discussion of the interview protocol revision is contained in Chapter 3. The information obtained from the interview was self-report data. Actual changes made and whether they were maintained was self-report. The focus of this exploratory study was the rationale or influencing factors for the behavior and not the actual changes made.

Procedure

Subjects were contacted by telephone and asked permission to interview. Confidentiality was assured. The interview took approximately twenty minutes to complete. The researcher tape recorded the interview if permission was granted or recorded the answers to the questions as completely as possible for later content analysis. The tape recording equipment was checked to assure clarity of voices prior to the interviews. When the individual refused to be tape recorded during the interview, the researcher asked for clarification of the responses and repetition when needed, to obtain as accurate a response as possible.

Analysis

The information collected from the telephone interviews, once coded, was analyzed according to the primary research questions. Interview responses were also tabulated to obtain additional descriptive data and discover trends. The chi-square test was used to determine statistical significance, and a content analysis was done on the additional response data. From these trends and findings, recommendations were made and hypotheses posed for further research. Data from the pilot were combined with the research data for statistical analysis but reported only when significant differences occurred. It is the assumption of the researcher that the particular form of HRA or risk assessment tool did not

influence the respondent's answers to most of the interview questions. The pilot data were not added to the research data when the form of HRA might affect the response, or when there was no corresponding question present due to deletion or addition during the revision process. The design and methodology for the research study are discussed in more depth in Chapter 3.

Limitations of the Study

The study sample was comprised of individuals from a large corporation in the Southeastern United States. The characteristics of individuals working in a large corporation, the nature of the work environment, and the influence of management may affect the health behaviors of its employees and therefore would limit generalization of the results.

Because the samples were comprised of volunteers and were convenience samples for the researcher, some inherent bias may have been introduced into the study. Individuals who volunteered to participate in the interview may already have had healthy behaviors or have followed the recommendations from the assessment, so they may have been eager to reveal their feelings to anyone who might ask. This may have limited the number of individuals who would otherwise supply information on why they did not maintain healthy behaviors. Since the sample subjects all possessed one or more risk factors, this may have affected

whether a behavior change was made and the reasons for making any changes. Generalizability of the results was also limited, since the sample was not randomly selected.

Controversy exists as to the reliability of self-report data. Baranowski (1985) described several problems with self-report data in relation to health behaviors. Some of these include physical environment in which the self-report data are collected, the emotional state of the respondent, prior survey experience, and the self-report measures used in the study. The researcher attempted to control for some of these limitations by carrying out the pilot study, gaining experience with the interview protocol and the types of responses obtained from the subjects. Again with self-report data, there is some question as to how much information individuals revealed about personal feelings regarding their behavior, especially when it came to identifying concerns about self-image or self-esteem.

Definition of Terms

1. Compliance refers to "the extent to which a person's behavior coincides with medical or health advice." Used interchangeably with adherence (Haynes, Taylor, & Sackett, 1979, p. 1-2).
2. Health behavior is any behavior that has a significant impact on health (Vanderschmidt, Koch-Weser, & Woodbury, 1987, p. 47).

3. Health promotion refers to "activities directed toward increasing the level of well-being, and actualizing the health potential of individuals, families, communities, and society" (Pender, 1987, p. 4).

4. Health Risk Appraisal (HRA) "is an assessment and educational tool that personalizes an individual's risk of disease or injury over the next ten years by comparing an individual's risk with the total mortality risk of his age, sex, and racial group. Health appraisal ages are calculated and reflect the age ranking of an individual based on his risk factors" (Frachel, 1984, p. 265). HRA is used synonymously with Health Hazard Appraisal.

5. Health risk assessment is the process of obtaining the information needed to identify an individual's health and risk status, obtained through questionnaires, interviews, and physical and lab data (Vanderschmidt et al., 1987, p. 48). This term may also be used as a noun to describe a more general tool for identifying health risks than HRA/HHA.

6. Lifestyle refers to an individual's unique living habits which may affect health positively or negatively (Schultz, 1984, p. 271).

7. Motive refers to the conditions or reasons that lead an individual to behave in a particular way (Polit & Hungler, 1983, p. 191).

8. Risk factor is "any factor associated with the occurrence of disease and which is suspected of being causally related" (Vanderschmidt et al., 1987, p. 47).

9. Wellness "is a conscious and deliberate approach to an advanced state of physical and psychological/spiritual health. This is a dynamic, fluctuating state of being" (Ardell, 1985, p. 38).

Organization of the Remainder of the Study

Chapter 2 contains a review of the literature, including an overview of risk appraisal and risk assessment with particular attention to studies concerning resultant behavior changes; current status of the Health Belief Model and compliance; health behaviors as affected by the three components of the interview--education, personal self, and environment; and a review of methodology, including telephone survey and content analysis.

Chapter 3 contains design and methodology issues for both pilot study and the subsequent research. This includes an explanation of research methodology, construction and revision of the interview protocol, data collection procedures, and the process of content analysis of the interview data.

Chapter 4 contains the statistical and descriptive results of the research. Chapter 5 contains a summary of the study, a discussion of the results,

recommendations for further research, and implications for educators.

Appendices include the actual interview protocols used both for the pilot and the research, descriptions of the risk appraisal used in the pilot and the actual risk assessment instruments used in the research, and letters of solicitation for volunteers for the study. Tables are included to display results of the survey.

CHAPTER 2

REVIEW OF THE LITERATURE

Evolution of Interest in Health Behavior

It is difficult to begin a review of the literature on health behaviors and motivators for health behavior change without first delineating the context from which this area derives and within which it will be examined in this study. The area of health behaviors and how to motivate individuals to change their behaviors developed from the health promotion and wellness movement. Halbert Dunn's theory on high-level wellness is discussed by Moore and Williamson (1984) as a launching point for focus on the concepts of health promotion and wellness. High-level wellness involves maximizing one's potential, according to Dunn, who is sometimes referred to as the father of the wellness movement. Ardell (1985), another proponent of the wellness movement, described wellness as "a conscious and deliberate approach to an advanced state of physical and psychological/spiritual health" (p. 38).

Green (1985) stated that trying to define health promotion, at best, is imprecise. This impreciseness is due to individual interpretations of the word health and the sometimes negative connotation the word promotion has.

The definition of health promotion that coincides closely with this research is one used by Pender (1987). She defined health promotion as "activities directed toward increasing the level of well-being and actualizing the health potential of individuals, families, communities, and society" (p. 4).

The early work of Dunn in 1961 led to a beginning emphasis on health promotion. Several events in the 1970s further increased interest in promoting healthy behaviors and lifestyles. As discussed previously, the Surgeon General, in his report on health promotion and disease prevention, emphasized the importance of lifestyle and pointed out that one-half of the deaths in 1976 could have been prevented by healthier behaviors (Orlandi, 1987). Stamler (1981) discussed a report entitled "Dietary Goals for the United States" released by the Senate Subcommittee on Nutrition and Human Needs in 1970, showing the link between diet and disease. It called for the decreased intake of salt, sugar, meat, and dairy products by all Americans.

Specific research efforts gained recognition during the 1970s. The Framingham and MRFIT studies emphasized the importance of "risk factors" in the occurrence of heart disease and the need for efforts to deal with these risks (Kannel & Schatzkin, 1983; Stamler, 1985-86). The Stanford Heart Disease Prevention Program was conducted during the period from 1972-1975 in several California

communities to develop methods for dealing with risk reduction education on a large scale basis (Kasl, 1980; Levanthal, Safer, Cleary & Gutmann, 1980; Maccoby, Farquhar, Wood & Alexander, 1977; Meyer, Nash, McAlister, Maccoby & Farquhar, 1980).

Perhaps more renowned is the research survey conducted by Belloc and Breslow from which many papers, reports and analyses developed (Wiley & Camacho, 1980; Wilson & Elinson, 1981). Belloc and Breslow surveyed nearly 7000 adult residents of Alameda County, California, in 1965 and found seven lifestyle variables which were significantly associated with a general index of physical health. These variables were hours of sleep, physical exercise, alcohol and cigarette consumption, obesity, eating between meals, and having regular breakfasts. After following these individuals for five and one-half years, they found significant relationships between the seven variables and age-standardized mortality. The relationships persisted in the findings of a nine-year follow-up study (Wiley & Camacho, 1980). The efforts of Belloc and Breslow provided longitudinal support for the concept that health behaviors do indeed have an effect on the long-term health of an individual.

Ardell (1985) identified several other powerful influences during the last two decades which have had an effect on health behavior. Consumerism is one of these influences. Self-responsibility and an emphasis on the

consumer opened up a whole new focus for health care. Naisbitt (1982) in his book Megatrends described a new health paradigm and emphasized the trend from institutional help to self-help. He pointed out that people are taking responsibility for their health habits, environment, and lifestyles. Toeffler (1980) also spoke of the rise of the "prosumer", or people who do for themselves, in the book The Third Wave (p. 290).

Other movements identified by Ardell include nutritional awareness, physical fitness, running and aerobics, stress awareness and management, holistic health, the women's movement, ecology interests and consciousness-raising and personal effectiveness training. All these areas have influenced and been influenced as a result of the interest in wellness and health promotion behaviors (McLeroy, Gottlieb, & Burdine, 1987).

Industry and the work place also play a role in health behavior motivation. Industry has not only been affected by the aforementioned lifestyle research and health promotion movements, but has also become a protagonist in that very movement. Large corporations such as Metropolitan Insurance, International Business Machine (IBM), Control Data, Johnson and Johnson, and American Telephone and Telegraph (ATT) are offering health promotion and fitness activities for their employees as a benefit. These companies, as well as others, are investigating the effects of such programs on their

overall insurance costs, employee productivity, absenteeism, employee satisfaction, turnover rates and overall corporate health (Baumann, 1982; Beck, 1982; Bernacki, 1987; Brennan, 1981, 1982a; 1982b; Hyner, Dewey & Melby, 1986; Naditch, 1981; McLeroy et al., 1987).

In summary, a multitude of factors have shaped the evolution of interest in health behaviors and the desire to change unhealthy behaviors. From specific literary accomplishments, reports by the Surgeon General, and research efforts, to environmental interests, industrial concerns, and even the women's movement, concern has been expressed over the need to measure health status and evaluate health behaviors.

Assessment of Health Behaviors

Health Risk Appraisal

It has been obvious that methods need to be developed for determining health status and, more specifically, health behaviors that could pose a risk for an individual. Health Risk Appraisal (HRA) is one such method for determining an individual's health risk status.

Goetz, Duff, & Bernstein (1980) described Health Risk Appraisal as a "method that describes a person's chances of becoming ill or dying from selected diseases. The procedure generates a statement of probability, not a diagnosis" (p. 119). Health Hazard Appraisal (HHA), a term used synonymously with HRA, is described by Safer

(1982) as a "counseling tool used to inform people about how their health habits and lifestyles affect their probability of dying within 10 years from potentially preventable causes" (p. 31). Wagner and co-authors (1982) stated that "HHA/HRA is a health promotion technique in which an individual's health-related behaviors and personal characteristics are compared to mortality statistics and epidemiological data in order to estimate his or her risk of dying by some specified future time along with the amount of that risk which could be eliminated by making appropriate behavioral changes" (p. 347). Keller (1980) described HHA as "one tool for encouraging a philosophy about health, health promotion, and disease prevention among consumers" (p. 112). From these definitions, one can see the diversified emphasis which individuals place upon the HRA.

The development of the HRA stems from the work of Robbins and Hall (1970). Their book on prospective medicine was a result of the impact of the Framingham Cardiovascular Risk Program Study on the medical community. In 1968 Robbins and Hall elucidated the concept of health risk appraisal and provided an example of exactly how to assess and quantify an individual's risk status (Goetz et al., 1980; Black & Ashton, 1985).

Process of Risk Appraisal

The basic steps in the HRA process are

1. Recording client data (personal characteristics, family history, behaviors and certain physiological measurements).
2. Calculating a risk projection based upon these data in comparison to national mortality statistics and data from epidemiological studies.
3. Estimating the reduction in risk attributable to each of a number of prescribed behavior changes.
4. Reporting the results to the client, using concepts as 10-year risk of dying, life expectancy, "appraisal age" and "achievable age" (Schoenbach, Wagner, & Karon, 1983).

The risk projections used in the HRA process have been developed from two sets of tables. The first set of tables involves the 10-year mortality probabilities for each of the ten leading causes of death according to age, sex, and race (black, white). These tables were first developed by Harvey Geller. The second set of tables involved in the analysis of an individual's risk are the Gesner tables. These tables, developed by Norman Gesner, reflect epidemiological evidence, actuarial experience, and expert opinion about the effect of specific prognostic characteristics on disease risk. The self-reported personal characteristics, family history, health-related behavior, and physiologic parameters provide a specific client risk factor from the Gesner tables.

After determining the average risk of dying for someone the client's age, sex and race (Geller table), the client's risk factor is combined with the average to supply a composite risk factor. This composite risk factor is then used in several mathematical calculations to identify an overall "appraisal age" for the client (Schoenbach et al., 1983). A more detailed explanation of how to calculate the risk factors is available in the article by Goetz, Duff and Bernstein (1980). When Robbins and Hall first developed the HRA, they did all these calculations by hand. This task has become much easier with the introduction of computers.

The "appraisal age" is unique to the HRA. It is the perceived age of a client based on a synthesis of the overall risks, average and client-specific. If the appraisal age is older than the client's actual chronological age, this indicates risk greater than average. Some risk appraisal instruments use "risk scores" or "health scores." Recommendations are usually made to the individual in the feedback on risks, which, if followed, will produce an "achievable age" or "achievable score."

Types of Risk Appraisals

Health Risk Appraisals have taken on many forms since the original HRA developed by Robbins and Hall. Some are as short as one page with no cost to the individual, while others may contain more than a dozen pages and cost well

over a hundred dollars. Risk appraisals may be completed and scored by hand or they can be interactive programs available on microcomputer (i.e., Pirie, Luepker, Jacobs, Brown, & Hall, 1983; Ellis & Raines, 1983). Some of the microcomputer versions produce a risk appraisal age immediately while others must be mailed to the corporations which developed them for batch processing.

Feedback instruments from the HRA vary also from a one-page risk factor analysis to a comprehensive fifty-page, illustrated, multi-colored book (Beery, Schoenbach & Wagner, 1986). Numerous commercial risk appraisals have been discussed in the literature and used in research (Bartlett et al., 1983; Beery et al., 1986; Ellis & Raines, 1983; Harris, 1982; Keller, 1980; Shultz, 1984). One HRA which is widely used, and available both in written and computer forms, is the Center for Disease Control HRA (Black & Ashton, 1985). The variety of HRAs available provides the user a large selection from which to choose.

Use of Risk Appraisals

Health Risk Appraisals have been used in many different types of areas and for many different purposes. Private practice settings have used HRAs during the annual physical exams to provide a more comprehensive overview of the client's health status (Bartlett et al., 1983; Black & Ashton, 1985; Harris, 1982). Corporations have added HRAs to their annual physical exams to try to improve the

health of their executives (McCann, 1977). Industrial settings have used HRAs to provide an aggregate report of the overall health status of their employees and to provide counseling for health improvement (Ladou, Sherwood & Hughes, 1975, 1979). University settings have introduced HRAs in their health centers to try to stimulate more beneficial health practices in college students and faculty (Bensley, 1981; Neutens & Pursley, 1985; Wilson, Wingender, Redican & Hettler, 1980). HRAs have even been modified for use with adolescents to help them clarify their values about health and assist them in identifying behaviors they would like to alter to promote healthier lifestyles (Moody & Moriarity, 1983; Moody & Rienzo, 1981). Nurses have incorporated HRAs into their practice to provide a more comprehensive assessment of the client (Doerr & Hutchins, 1981) or into their research efforts as a variable which might influence health behavior change (Frachel, 1984; Keller, 1980; Pender, 1987; Shultz, 1984; Zindler-Wernet & Weiss, 1987).

Limitations of Risk Appraisals

Although HRAs have been used in a multitude of settings, there are limitations which have been identified concerning their structure and use. One problem inherent in any form of self-report data is that of reliability. In one study only 30 of the 203 individuals readministered an HRA had no contradictions in their reported data, a 15% reliability rate (Sacks, Krushat & Newman, 1980).

Individuals have been found to give very different answers to the same questions when repeated in less than four weeks, even for items which could not change (Beery et al., 1986; Goetz & McTyre, 1981; Safer, 1982; Wagner et al., 1982).

The validity of the HRA has been questioned for several reasons. Risk factor data may be extrapolated from groups other than that of the client and as a result may produce risks which are not really typical for that individual (Schoenbach et al., 1983). The data from which the risk factors are calculated and the method of calculation, especially when multiple risk factors enter into the picture, is a concern (Goetz & McTyre, 1981; Safer, 1982; Wagner et al., 1982). The validity of the information supplied by the individuals themselves is also questioned, especially with regard to parameters like height, weight and blood pressure when not measured at the time of the appraisal (Black & Ashton, 1985). The highly personal and sensitive nature of some of the questions has also been identified as a threat to validity (Goetz & McTyre, 1981).

Another limitation of HRAs is the fact that calculations are based on mortality rather than morbidity data. This leads to little statistical incentive for any individual under age 40 to initiate health behavior changes. With the use of morbidity information, the risk of contracting certain diseases such as arthritis or skin

cancer could be predicted (Beery et al., 1986).

Unfortunately, much of the data on morbidity is not available at the present time.

Health Risk Appraisal alone does not take into consideration the societal or environmental factors which play a part in risk assessment. This causes a tendency to place the blame on the individual and poor health habits. There are in fact some characteristics over which an individual has no control such as heredity and sex (Fielding, 1982; Safer, 1982; Wagner et al., 1982). Fear and possible psychological and physical risk are also discussed as limitations which might arise from poor or even false results. An individual might become depressed, suffer from hypochondriasis, and spend large sums of money on unnecessary tests as a result of the information received from an HRA (Beery et al., 1986; Wagner et al., 1982).

HRA and Behavior Change

Health Risk Appraisal as a tool in the behavioral change process has been important since its introduction into the health care setting and has been the basis for a large portion of the research in the area of health behavior change. Research has been done with HRAs and their effect on behavior in government, industry, university and private practice settings.

Intent to change behavior was measured by Ellis and Raines (1983) with a computerized HRA. They tested some

twenty-eight, predominantly white adults during a five-hour period at the Minnesota State Capitol. Of these, approximately one-third said they would probably or definitely change their living habits as a result of the appraisal. Bensley (1981) found that 71% of the thirty-one college students who were administered HRA during a course on personal health at Central Michigan University were motivated to initiate changes in their health behaviors and 90% of those motivated to change actually made changes. Conversely, Wilson et al. (1980) found in their study of college students that HRA was not a good tool for behavior change but possibly only increased interest in health.

Wagner et al. (1982) discussed a study done by Lauzon with 346 Canadian government workers to identify the effects of HRA on behavior. Lauzon reviewed changes which occurred three months post HRA in three groups (HRA only, HRA and results, HRA and counseling). He found positive results for the HRA feedback groups with relation to such parameters as appraised age, blood pressure and anxiety. Stryd (1982) compared one hundred randomly selected workers at an Upjohn plant who were administered HRAs and then divided into counseling vs. non-counseling groups. Six months later she found mixed results. The younger group did not decrease their "appraised age" with or without counseling on repeat HRA. The middle-age group who were counseled and the older-age group who were not

counseled increased their life expectancy on repeat HRA six months later.

Ladou et al. (1975) conducted a study on 107 randomly selected individuals from the Ames Research Center who were administered HRA and received counseling during their annual physicals. Within one year these individuals were retested and found to have improved their risk age by 1.4 years. In a follow-up of this study four years later, Ladou and his colleagues (1979) reached 26 of the original 107 participants. After readministration of the HRA, a 2.38 year risk reduction was evident for this group.

In another study done by Bartlett et al. (1983), patients from a Family Practice setting were interviewed three to five months post HRA. Of the original 69 patients, only 53 could be contacted. Of those who were given recommendations for change, approximately 41.3% had begun exercise programs, 27.8% had stopped smoking, and 20% had limited their alcohol intake. The authors concluded that HRA served as a trigger for health decision making.

Limitations of Current Research

A significant portion of the research to date has used HRA in combination with other techniques such as counseling, classes, and telephone follow-up so that the information on HRA alone is limited. Beery et al. (1986) in their state of the art review of HRAs for the National Center for Health Services Research and Health Care

Technology Assessment discussed several short-comings with the research on HRA and behavioral changes. The use of volunteers in most of the studies limits not only generalizability but also internal validity. There is also regression toward the mean on remeasurement along with the effects of self-reported data.

Many recommendations are made in their report regarding the need for future research on HRA as a teaching tool alone, HRA in conjunction with risk reduction programs, and HRA in comparison with other motivational tools. In their conclusion they state

Health promotion and disease prevention are areas that require innovative programming and cautious interpretation of results. HRA is but one approach. . . . The evaluation of the current state of the art in HRA reported on here suggests that although HRA makes large contributions to the field, continued research and refinement are necessary. (p. 62)

Summary

Health Risk Appraisal serves as a tool for determining an individual's risk factors and at the very least may provide an increased awareness or trigger for further health decisions. HRA is currently used in a variety of settings, usually in conjunction with counseling or some type of risk reduction or health promotion program. To date, the evidence that HRA alone is able to cause change in health behavior is inconclusive. HRA serves as a first step for behavior change.

Beyond Risk Appraisal/Risk Assessment

"The philosophy of HRA," or for that matter any type of health assessment where risks are identified, "is based on the premise that people are problem solving individuals who can make responsible decisions about their lifestyles and are capable of following through with them" (Black & Ashton, 1985, p. 557). However, people not only have a free will but are unique and complex individuals influenced by a multitude of factors. Our health status and behaviors, as a consequence, are also influenced by a multitude of factors which are constantly changing.

Bergner (1985) identified five dimensions of health status which are interdependent. These are

1. The genetic foundation or inherited characteristics that form the basic structure on which all other aspects of health status must build.
2. The biochemical, physiologic, or anatomic condition, which includes disease, disability, or handicap, whether obvious or not.
3. The functional condition, which includes performance of all the usual activities of life, such as working, walking, and thinking.
4. The mental condition, which includes self-perception of mood and emotion.
5. The health potential of the individual, which includes longevity, functional potential, and the prognosis of disease and disability. (p. 698)

Dimension number five of Bergner's definition is the stage where health promotion enters the picture. Bergner spoke only of the potential of the individual with respect to the personal self. She did, however, mention that her notion of health "ends at the skin" (p. 698). It is quite obvious that many other concepts besides longevity, functional potential, and prognosis for disease must be taken into consideration as affecting the formation, maintenance, and change of health behaviors and the overall health status. Later in her article Bergner mentioned the influence of society, the health care system, social and familial factors, and personal factors.

Environment, education, and the individual are emphasized in the literature as three important areas of concern when dealing with the issue of health behavior change. Syme (1986) stated that "if behavior change programs are to be developed to prevent disease, more attention will need to be given not only to the behavior and risk profiles of individuals, but also to the environmental context within which people live" (p. 496). Black and McDowell (1984) emphasized the interdependence between health behaviors and the importance of personal awareness and self-acceptance in a program called Healthstyles. The program viewed risk factors as the ultimate product of numerous environmental and personal influences. Wise (1979), in discussing patient education efforts to effect behavior change, stressed the importance

of working within the individual's value system. Radford and Harris (1986) discussed the importance of education in the behavior change process. Murphy (1982) and Allen (1982) emphasized the part that the cultural environment plays in the motivation for change, resistance to change, and the recidivism that occurs after health behavior changes.

The motivation for initiating health behavior change is affected by environment, education, and individual characteristics also. The motivation to maintain these changes is even more complex. Lancaster (1986) in her article on creating the environment for motivation described four principles of motivation. These are

1. Motivation stems from emotions, how people feel about themselves, their lives and others.
2. Motivation is unconscious, often we don't know why we do what we do.
3. Our tastes or preferences influence us.
4. We do things out of habit. (p. 203)

A review of the literature on motivation and health behaviors would not be complete without looking at the Health Belief Model and research on compliance.

The Health Belief Model

The Health Belief Model was developed in the early 1950s by Irwin Rosenstock, a social psychologist, and his colleagues at the United States Public Health Service to

explain preventive health behaviors. They were trying to identify why individuals failed to partake of health screening tests to detect asymptomatic disease.

Value-expectancy theory and the work of Kurt Lewin were a basis for the major propositions of the Health Belief Model. Value-expectancy theory hypothesizes that whether an individual takes an action is dependent on two main things: the value that the individual has placed on the outcome, and the individual's estimate of the probability that the given action will actually produce the outcome (Janz & Becker, 1984, p. 2).

Components of the Model

Marshall Becker accomplished a significant portion of the research on the Health Belief Model and although the model was revised by Becker and Maiman, Becker is more renowned for it's revision (Feurstein, Labbe & Kuczmierczyk, 1986; Woldum, 1985). It is not uncommon to hear people refer to the model as Becker's Health Belief Model. There are five major components or dimensions of the Health Belief Model as revised by Becker, along with several other factors he has added for explication and usability of the model. Each of these components and factors will be explained.

Perceived susceptibility. This component has to do with feelings of personal vulnerability to illness in general. Do individuals subjectively perceive that they are able to contract a specific condition or disease? Do

they believe the diagnosis of the condition to be correct? Individuals vary widely in the range of perceived susceptibility.

Perceived severity. This component reflects the degree of impact, mild to severe, that developing a specific condition would have on an individual. Factors other than health itself are taken in to consideration when an individual identifies severity. Not only is the presence or absence of disability or possible death considered, but other factors might also be considered such as the effect of the specific condition on the work situation, pain involved, consequence to family and friends, and financial aspects.

Perceived benefit. Is there a belief that the proposed action will reduce susceptibility to the condition or be able to control the current problem? Are the recommended actions feasible? Individuals must believe that their actions will produce the desired outcome.

Perceived barriers. This component deals with a cost-benefit analysis undertaken by the individual. The individual looks at the perceived cost of the action, that is the potential negative aspects and the amount of effort necessary to overcome any of the perceived barriers. The cost may or may not have anything to do with financial cost. And the barriers may or may not be real. It is the perception of these barriers to the individual and the resultant effort perceived to be necessary that are

important. The perceived benefits and barriers exemplify the influence of Kurt Lewin's force field theory with its positive and negative forces.

Cues to action or motivation. For an individual to take action a stimulus is needed from internal or external sources. In some references this is called a cue to action (Janz & Becker, 1984; Pender, 1987) and is not really considered a fifth component, but a modifying factor. Becker (1974) called this stimulus motivation and included it as a major component of the model (p. 86). An internal cue to action might be bodily symptoms such as pain. External cues might involve the media or interpersonal relationships. The intensity of the cue necessary to stimulate action varies with the degree of perceived susceptibility (Janz & Becker, 1984; Woldum, 1985) and with the level of readiness of the individual to initiate action (Pender, 1987; Woldum, 1985).

Other Essential Variables

Modifying factors are also identified as essential to the Health Belief Model. These include demographic, sociopsychological also called attitudinal, and structural variables. Demographics includes sex, age, income, education, and ethnicity. Sociopsychological factors involve the effects of social pressure, social influence, social support, and normative beliefs. Knowledge about the specific disease or condition and previous contact

with it are classified as structural variables (Pender, 1987).

Enabling factors and interactional factors are discussed by Becker (1974) as additional concepts which influence health beliefs. Other authors in describing Becker's model include these under modifying factors (Hallal, 1982; Pender, 1987; Woldum, 1985). Becker included such things as prior experience with action, illness, or regimen, and source of advice or referral under enabling factors. The quality of the doctor-patient relationship, agreement between physician and patient, and the feedback to the patient are listed as interactional factors (Becker, 1974, p. 89). It is apparent that numerous variations of the model have existed since the 1950s when it was first developed by Rosenstock.

Interaction of Components

The components of the model are classified into three main areas, which include individual perceptions, modifying factors, and likelihood of action. The area of individual perceptions includes perceived susceptibility and severity. Modifying factors incorporates all the modifying factors, the cues to action and the perceived threat. Perceived threat is the result of the combination of perceived susceptibility and severity. Modifying factors affect individual perceptions which in turn identify the level of threat to the individual. Modifying factors also affect the perceived benefits and barriers

which when added together produce some likelihood of taking recommended actions.

Research Utilizing the Health Belief Model

Janz and Becker (1984) reviewed the literature between 1974 and 1984 regarding the use of the Health Belief Model with respect to the variables of susceptibility, severity, benefits and barriers. For purposes of their review, they divided the research using the model into the areas of preventive health behaviors (PHB, or actions taken to avoid illness or injury), sick-role behavior, and clinic visits. Of the 29 investigations they surveyed, only 13 related to preventive health behaviors.

Susceptibility, benefits, and barriers were found to be consistently associated with outcomes in studies involving PHB. The concept barriers was associated with outcomes in all of the 13 studies in which it was examined. Severity was poorly related if at all in the studies. The authors explained this by speculating that individuals have a difficult time conceptualizing the dimension severity, especially "1) when they are asymptomatic, 2) for health threats that are usually thought to be long-term and 3) concerning medical conditions with which they have little or no experience" (p. 36).

Of these 13 studies involving PHB, only 7 of the studies related to risk-factor behaviors. Benefits and

barriers were positively correlated with the specific PHB studied in four of the seven studies. The behaviors in these four studies included exercise, smoking, and driving under the influence of alcohol. The authors also mentioned eleven studies done prior to 1974 on PHB. In these studies, susceptibility was the most significantly related variable to PHB.

More recent studies deal with either using only portions of the Health Belief Model (Verbrugge, 1985; Murdaugh & Hinshaw, 1986) or the Health Belief Model in combination with other variables (Lau, Hartman, & Ware, 1986). No new information seems to be apparent, just as Janz and Becker (1984) surmised in their conclusions. However, several authors point out the need for more research on intervention strategies for modifying the dimensions of the model, that is, compensating for or decreasing the identified blocks to effective action (Feuerstein, et al., 1986; Janz & Becker, 1984).

Pender (1987) stated that the model is an appropriate paradigm for health-protecting or preventive behavior, but is not appropriate for health-promoting behavior. Pender distinguished between health-protecting behavior and health-promoting behavior. Health protection is "directed toward decreasing the probability of experiencing illness by active protection of the body against pathological stressors or detection of illness on the asymptomatic stage." Health promotion is "directed toward increasing

the level of well-being and self-actualization of a given individual or group" (p. 57).

Pender proposed her own model for health promotion which possesses many similarities to Becker's model with the addition of certain other factors such as perceived self-efficacy. The reader is directed to her book for an in-depth explanation of the model. This researcher agrees with Pender in delineating the difference between health protecting and health-promoting behaviors. If more research is done specifically with health-promoting behaviors and the Health Belief Model, the concept benefits might evolve as being more significantly related to outcomes than the concept susceptibility.

Summary

The Health Belief Model first developed by Rosenstock and later refined by Becker has gone through many changes since the early 1950s but it still serves as a tool for researchers today. It provided one of the first unique and fairly comprehensive attempts for helping to understand those factors which influence health behaviors. The dimensions of susceptibility, severity, benefits, and barriers provide important concepts for dealing with preventive health behaviors. By including the concept of motivation, Becker strengthened the model and its possible applications. Many of the concepts and dimensions contained in the Health Belief Model may be perceived by participants in this research as motivators for health

behavior change. These concepts may also become apparent from the content analysis of the results.

Compliance

Compliance, as defined by Haynes et al. (1979), is "the extent to which a person's behavior coincides with medical or health advice" (p. 1-2). Adherence is used synonymously with compliance. The authors pointed out that the first recorded incident of noncompliance occurred in the Garden of Eden when Eve, prodded by the snake, chose to alter her "health belief model" and ate the fruit of the tree of knowledge. This "sin" probably accounts for the negative connotation associated with the word noncompliance (p. 3).

A multitude of factors influence the compliance of patients with regard to health-related behaviors. The following review will only begin to mention the many factors, as most of them will be discussed again in greater detail under the educational, environmental or personal factors affecting health behaviors.

Factors Affecting Compliance

Personal factors

Individual perceptions, feelings, and values have been a concern to researchers studying compliance. Dracup and Meleis (1982) suggested that at least four components derived from role theory must be present for compliance to occur. These are self-concept, role enactment,

complementary roles, and periodic evaluation of role-enactment by self and others. The individual must incorporate the "at risk" role into the self-concept. The individual must demonstrate knowledge and competency in the enactment of the proposed role. There must be a congruence of the client role with the individual's other roles. And the compliance behaviors must be deemed valuable by the client and validated by significant others.

Self-concept and health beliefs were also studied by Andreoli (1981). In a study of 71 hypertensive individuals at a Veterans Administration Hospital outpatient setting, Andreoli investigated the health beliefs and self-concept of compliers and non-compliers. She found that there were no significant differences between the two groups on health beliefs and self-concept. This particular sample consisted of only men in a speciality high blood pressure clinic. The author concluded that the concepts of self-concept and health beliefs may not be useful with male hypertensives in relation to compliance with treatment regimens and that other variables need to be investigated for this group.

Education

Various educational and behavioral strategies have been studied as to their effect on compliance. Kerr (1985) discussed predictors of adherence which include knowledge of one's disease and regimen, motivation to

achieve control, perception that adherence is useful, and family and social support. She conducted a study of 116 hypertensive volunteers randomly assigned to four groups: control, education and self-monitoring, education only, and self-monitoring only. All subjects were given a pre-test on general knowledge of hypertension. The education groups were given a 10 minute lecture on hypertension. The self-monitoring groups were taught to check their own blood pressures and given the equipment to do this at home. At the end of three months, adherence was measured in three ways: self-report, blood pressure reading, and comparison of regimen with number of pills taken and recorded on a tally sheet. A pill count was done to identify the number of pills used. Kerr found that none of the groups significantly increased adherence when on-going support was not provided. Only 73.4% of those remaining in the study at the end of three months were compliant. This did not include those who dropped out, possibly due to non-adherence. Education did not seem to have a positive effect on compliance in this study. The author suggested that education may not be effective in changing the "fatalistic" view sometimes held by those with chronic disease.

Haynes et al. (1979) discussed numerous educational and behavioral strategies for improving compliance. Some of these include: counseling, goal-setting, reminders and feedback, tailoring or individualizing, contracting,

reinforcement, and self-monitoring. They summarized that the potential effects of education and improved communication on patient compliance are great. However, introducing health education that is relevant, comprehensible, and useful to the patient at a time when it is most likely to motivate, enable, and reinforce health behavior is a difficult task. This is true especially since this critical time is as likely to occur outside the health encounter as it is within (p. 173).

Treatment and disease

Numerous factors relating to the disease and the mechanics of treatment are discussed in Haynes et al. (1979) as to their effect on compliance. Only three factors were found to have a positive relationship to compliance. These were presence of disability, individual appointment times, and parenteral drug injections. Negative relationships were found with schizophrenia or other mental illness, presence of symptoms, time lapse from referral to appointment time, waiting time, duration of treatment, number of medications prescribed, cost, safety containers, and pharmacist errors.

Social support

The positive influence of family and friends on compliance has been noted by several authors (Coulton, 1978; Dishman, Sallis, & Orenstein, 1985; Gottlieb & Green, 1984; Haynes et al., 1979; Pender & Pender, 1986; Woldum, 1985). Wallston, Alagna, DeVellis & DeVellis

(1983) in their review of research on social support and physical health found inconsistent results among correlational studies on social support and compliance. Studies involving interventions and group support seemed to provide more consistent evidence especially with those studies concerning smoking reduction.

Patient-clinician interaction

Haynes, et al. (1979) pointed out two particular aspects of the patient-clinician relationship that appear to be of significance with relation to compliance. Patient satisfaction is one of these aspects. Satisfaction with the relationship, with the competence of the provider, and with the cost and convenience of care all combine to provide an overall level of satisfaction.

Another aspect is the communication between the clinician and patient. Communication not only involves the interpersonal communication between the clinician and the patient, but also the level and degree of explanation of questions, and any information about the condition and management of that condition.

Provider awareness of the patient's concerns was another area discussed by these authors which may be important. It is appropriate to mention at this point that much of the research that has been done on compliance has dealt with medication compliance. Medications can be traced in the urine, drug levels monitored in the blood stream, and pills can be counted. The presence of

quantitative data seems to add more credibility to studies on behavior. It is more difficult however, to measure patient satisfaction or communication without imposing some subjective influence or interpretation on the data.

Summary

Compliance, and the many factors which influence it, has been studied for many years. It appears to be as complex as the issue of health behavior motivation itself. Although much research has already been done, the need for more is apparent. A particular area in need of research is the area of identifying the critical times when individuals are most susceptible for initiating behavioral change.

Evaluation of Factors Affecting Health Behaviors

Three major concepts have been identified earlier in this review as being significant for their effect on health behaviors and will be emphasized in this research. These are education, the personal self, and the environment. Research in each of these areas will be examined for possible relationship to the health behavior change process.

Education

Education, in the context of this research, refers to the design and development, delivery, and content of the risk appraisal or risk assessment information given to the client. For purposes of this review design relates to

instructional design characteristics such as visual versus written information, or use of persuasive versus factual information. Development will refer to designing the educational experience specifically for the individual or individualization. Delivery refers to individual versus group, demonstration and return techniques, use of reinforcement and goal-setting, and other educational strategies. The actual content of the appraisal and the feedback tool is referred to as knowledge. Much of the research mentioned here comes from the area of health education. Where studies concerning specific health behaviors could be found, they have been included.

Design and development

The positive effect of visual strategies is presented in a study on smoking. Jamrozik (1984) reported on a study of presenting anti-smoking information to over 6052 individuals in a controlled trial. Three different anti-smoking interventions ranging from advice alone to actual demonstration of the exhaled carbon monoxide were used. In a survey sent to the individuals one year later, the group that received the visual representation of what smoking could do to their lungs tended to have better success with not smoking.

Simonson (1984) discussed the use of persuasive messages delivered in films as an effective way to affect behavior associated with drinking and driving. Also mentioned is a study done on dental hygiene depicting

various stages of dental decay which aroused various levels of fear. The researchers found the minimal fear arousal technique to be most effective, while too much fear arousal created tension. The effects of persuasive messages are also discussed by Fleming and Levie (1978).

Green (1982) examined another way to individualize instruction. In a survey of some 246 families and 71 graduate students in Central California, Green looked at the preferences for obtaining self-care information. Of the families, 38% preferred written information, 35% preferred a non-physician source, and 16% preferred television. Obviously, some families did not reply or had no preference. The graduate students, on the other hand, preferred more than one method with 78% choosing seminar, 72% choosing non-physician, and 42% selecting television. Levenson (1982) reported on another survey which attempted to individualize instruction given to cancer patients by asking how they preferred to receive information. Over half preferred private discussion.

Sloan (1985) discussed a three hour program on lifestyles called Positive Pulse. This program was designed by asking community members exactly what they would like in the way of a health promotion program. The developers then took the suggestions and developed a program which was offered to the community. How could they refuse something they themselves had developed?

Sweezy and Sweezy (1976), in an article directed toward physicians, spoke of the importance of using a variety of educational techniques and theories in the educational encounter with the patient. Determining the readiness of the patient and the patient's entry level behavior is especially important for individualizing instruction. VanDerVynckt (1986) discussed the need to investigate the attitudes and behaviors of the target audience along with their dietary practices prior to curriculum development. She proposed that a more relevant and motivational program on nutrition could be developed for individuals by doing this.

Clark (1983) in an evaluative article on learning from the media also emphasized the need for individualized instruction. He discussed the need to look at specific attributes of the method of instruction along with the attributes and beliefs of the learner instead of comparing the various methods of instruction. By evaluating the particular attributes and beliefs of the individual, a more individualized form of instruction could be developed.

Delivery

In looking at the delivery of the information, Koniak (1985) reviewed the literature with regard to auto-tutorial versus lecture method of presentation. She also conducted a study with the two methods on nursing students learning to perform a developmental assessment on

children. Her conclusion confirmed that auto-tutorial instruction is an effective and efficient alternative method of teaching. This is of little surprise as Clark (1983) has pointed out few benefits to be gained from employing any specific medium to deliver instruction. There may be some evidence however that specific gains can be made with the use of computerized instruction in health education and compliance with health behaviors (Deardorff, 1986; Hakanson, Ellis, & Raines, 1983).

Active versus passive learning to effect behavior change is highlighted in an article by Michalek, Walsh, Burns, and Mettlin (1981) and another by Assaf, Cummings, Graham, Mettlin & Marshall (1985). In both these studies, the authors pointed out the importance of actual "hands on" experience in learning breast self-exam (BSE). Pamphlets, lectures, films and video-tapes were not as effective in changing behavior in self-examination for breast lumps. The opportunity to actually practice with corrective feedback increased confidence and performance of BSE.

Kirscht, Kirscht, and Rosenstock (1981) studied over 400 subjects with hypertension and found that interventions with a personal approach (phone contact) had a greater effect on medication taking behavior than impersonal interventions. They also stressed the importance of reinforcement as a necessary factor in delivery.

A study by Alexy (1985) investigated collaborative versus provider-set goals in an industrial setting using 152 employees. Individuals were administered a personal risk profile and then divided into three groups: a control group, a provider-set goals group where the provider established employee goals, and a collaborative goals group. The behaviors studied were weight management, smoking, alcohol intake, exercise, seat-belt usage, and BSE. All groups had their risks identified and explained. At the end of three months, the only area in which the collaborative group was more effective was with weight loss. The provider group had more change in overall life expectancy, alcohol consumption, exercise, and seat-belt usage. The author suggested that even though the provider group had an increased number of goals to achieve, the participants may have viewed this as more of a challenge. She also suggested that perhaps those in the collaborative goal-setting group had difficulty setting goals they could realistically achieve. This study is particularly interesting since it involves risk assessment and measuring resultant health behavior change.

Mullen, Green, & Persinger (1985) performed a meta-analysis on 71 studies involving educational efforts with chronic disease. They found substantial benefits evident from educational programs among the chronically ill with the strength of the effect based on the quality of the educational method. The three strongest predictors

of quality were individualization, feedback, and reinforcement. Reinforcement is also emphasized by Barnes and Nybo (1978) in their Personal Health Behavior Project. In this program they instructed individuals to set up a system of rewards and penalties to motivate themselves toward the desired health behaviors.

Knowledge

Ross (1981), having reviewed the literature on factors influencing successful preventive health education, elaborated on three particular categories of knowledge. These include awareness knowledge, principles knowledge, and how-to knowledge. Awareness knowledge serves as a mechanism for attracting attention to the existence of a problem. Principles knowledge concerns information describing treatments, causes, and characteristics of the risk. And how-to knowledge provides the individual with a clear recommendation for action. These three categories of knowledge will be used to discuss the literature in this part of the review.

Awareness knowledge. Attracting the client's interest has been cited as a major function of health risk appraisals discussed in more detail earlier in this review (Beery et al., 1986; Moody & Rienzo, 1981). Mass media is also used as a tool to promote awareness of a problem or condition. Bettinghaus (1986) reviewed studies involving radio, television, and newspapers for their effect on health behavior. He concluded that the media

alone are generally ineffective for changing health behavior but have been effective in gaining attention and arousing interest in target audiences.

Principles knowledge. Shireffs (1978) discussed factors important for assuming individual responsibility for one's health and emphasized the importance of knowledge. To quote the author, "the more knowledge an individual possesses regarding health and basic anatomy and physiology, the better prepared he or she will be to make responsible decisions which are health generating" (p. 419). She went on to say that lack of health knowledge is perhaps the single most important reason people feel inadequate in dealing with physicians. Providing this knowledge to the consumer is of prime concern to the health educator.

The positive effects of knowledge are pointed out by several authors. Tagliacozzo and Ima (1970) investigated the effect of increased knowledge about illness on health behavior and found a positive correlation. Individuals with an increased knowledge about their illness were found to be more consistent in keeping their scheduled clinic visits. These results however did not seem to hold when the variables of increased experience with illness or other motivators were added.

In a study done by Zimmerman, Safer, Levanthal and Baumann (1986) the effects of health information provided during a blood pressure screening had an impact on both

individuals with high and normal blood pressure. The information, even though only ten minutes in length, increased knowledge and beliefs about high blood pressure when measured several weeks later. In a follow-up replication study by the same authors, normotensive individuals were motivated to take an initial step toward changing behavior as measured by the number of their requests for risk reduction pamphlets. The authors concluded that if one can succeed in changing knowledge with a brief ten minute slide-tape program, it may be worth exploring the effects of repeated exposure to brief educational programs on behaviors.

Problems in transferring knowledge and gaps in knowledge of principles have been studied. An interesting study by Glazer-Waldman, Hall, and Weiner (1985) looks at 100 patients in a hospital setting to measure their reading ability. Of this group, 19 were dropped because they could not read. Of the remaining 81, only 40% could read at the sixth grade level. This is of particular concern when trying to present information related to illness or risk factors and must be considered in the development of the educational experience.

Durie (1985) studied the cardiovascular knowledge of 29 patients with angina ranging in age from 30 to 65. She found a profound gap in the level of knowledge of these patients. Forty-five percent could not identify even one

risk factor for heart disease and one third did not know that smoking was related to their condition.

How-to knowledge. Several studies are reported in the literature regarding how-to knowledge, that is, showing the patient exactly what needs to be done. Two studies, mentioned previously, showed the positive effects of the "hands-on" approach to teaching breast self exam (Assaf et al., 1985; Michalek et al., 1981). Grimm (1983) reported on the importance of specific recommendations in the outcome of the Multiple Risk Factor Intervention Trial. The group of men who were assigned to the special intervention group had particular "how-to" information on reducing cigarette smoking and modifying their diets to decrease cholesterol levels along with treatment for hypertension. This group showed significant changes in behavior and cholesterol when compared to the usual care group. The importance of specific recommendations for change is also emphasized by Coulton (1978), Zentgraf (1986), and Zimmerman et al., (1986).

Summary

The process of education and some of the many ways it can influence health behaviors have been discussed. How the information regarding risk assessment is designed and presented along with the actual content may have an effect on the individual. Individual preferences and learning styles must be taken into account when determining exactly

what should be presented, especially concerning recommendations for change.

The Personal Self

The personal self has been defined earlier as the individual characteristics, internal feelings, and beliefs which impact on how the individual behaves in regard to health. Numerous concepts have been discussed in the literature. Those related to health behaviors are reviewed.

Locus of control

Locus of control (LOC) is a concept that derives from social learning theory and more specifically value-expectancy theory. Locus of control refers to the belief that there is a association between one's behavior and the resulting outcome (Rotter, 1982). Individuals with an internal locus of control or internals, perceive that reinforcement or the outcome of a situation is contingent upon their behavior. Externals perceive that reinforcement and outcomes are the result of luck, fate, chance or under the control of powerful others.

The association between locus of control, health values, the behavior of family and friends and performance of preventive health behaviors was investigated by Abella and Heslin (1984). They studied 71 male volunteers with a mean age of 19.7. Their results showed that individuals who value health and had an internal locus of control were more likely to engage in preventive health behaviors

(i.e., not smoking, exercising) as measured by self-report.

In a contradictory study with female college students, Wurtele, Britcher and Saslawsky (1985) found that positive value placed on health and self-rated health status were better predictors of health behaviors than locus of control. Their results suggest that for behaviors performed in the absence of any kind of threat to the individual, value placed on a healthy life is more important in predicting behavior than an internal locus of control.

Kijek (1981) reported in her dissertation study of 78 male, volunteer, highly educated, white collar workers that those with an internal locus of control report a better health status. She also found that individuals with less life change events report a better health status and that LOC and life change events together predict health status more accurately. Shipley (1981) found another positive effect of internal LOC with individuals trying to quit smoking. Those with an internal LOC were more successful in their attempts.

Several other studies reported conflicting results concerning the correlation of positive health behavior and internal locus of control. Hallal (1982) found that women who practice BSE have higher scores on health beliefs and a positive self-concept, but were not found to be more internal than those who did not practice BSE. Lau and

Hartman (1986) report the opposite. Jordon-Marsh and Neutra (1985) reported that although individuals in a six month weight loss program tended to become more internal, those with an external health locus of control were more likely to actually lose weight. Muhlenkamp and Nelson (1981) did not find that those who lost weight became more internal with regard to LOC.

There are obviously confusing results in reviewing the literature on health behaviors and locus of control. One problem exists in that locus of control can be measured by using several different scales (Rotter, 1972; Wallston, Wallston, Kaplan & Maides, 1976). Lau and Hartman (1986) also pointed out in their review of health as a value, that an internal health locus of control and the belief that one has control over health is irrelevant unless the individual also places a high value on health. Kristiansen (1985) and Coulton (1978) also stressed the importance of determining the value placed on health. Only some of the previously mentioned studies looked at both health values and LOC (Abella & Heslin, 1984; Lau, Hartman & Ware, 1986). In spite of conflicting results related to LOC, most authors still suggested that internality is associated with good health and achievement of health behaviors (Abella & Heslin, 1984; Woldum, 1985).
Self-concept, self-esteem, self-actualization

Health behaviors have been studied as to how they relate to the concepts of self-concept, self-esteem, and

self-actualization. Hallal (1982) found that performance of breast self exam among a sample of 207 women is correlated with a higher level of self-concept. Calnan (1985) interviewed and tested some 2084 women in England with regard to performance of seven types of preventive health behaviors. No significant statistical relationship could be found between self-esteem and any of the preventive health behaviors.

Laffrey (1985) investigated the concept of self-actualization as it relates to health conception and health behavior choice. She interviewed individuals and administered the Personal Orientation Inventory developed by Shostrom to measure self-actualization. Her results suggested that self-actualization was not associated with age of participants but was associated with higher education and income levels. No significant relationship could be found between self-actualization and the concepts of health conception and health behavior choices.

Walker, Sechrist and Pender (1987) in a more recent study, developed a 107 item questionnaire to determine the characteristics of a health-promoting lifestyle. After administering their instrument to a heterogeneous sample of 1107 individuals, six dimensions proved to be significantly related to a health-promoting lifestyle. Self-actualization proved to be the most significant followed by health responsibility, exercise, nutrition, and interpersonal support. The authors propose the use of

their Health-promoting Lifestyles Profile instrument for describing the health-promoting component of lifestyle in various populations, for exploring correlates of a health-promoting lifestyle, or for measuring changes in health-promoting lifestyle as a result of interventions.

Self-concept, self-esteem and self-actualization also present unpredictable associations with health behaviors. It is obvious that more research is needed in this area.

Optimism, hardiness, future-orientation

Optimism is identified as an important factor relating to health behaviors. Scheier and Carver (1985) found that optimistic individuals developed fewer symptoms because their increased efforts paid off in successful goal-attainment of health matters. Any difficulties they did experience seemed to have less of an impact on their health. The authors felt that perhaps optimistic individuals took steps to deal with problems sooner than those who were not optimistic. Kirscht (1983) in reviewing the literature on preventive health behaviors found that factors relating to controllability of health situations seemed to be associated with optimism.

Hardiness is another construct mentioned by Scheier and Carver (1985) which seems to be closely related to optimism. Hardiness is composed of the three dimensions of commitment, control and challenge. Hardiness is proposed as serving as a buffer against stress, thereby promoting health and decreasing the incidence of illness.

Davis, Jackson, Kronenfield, and Blair (1984) also reported that hardiness is associated with a positive health status and that hardy individuals tend to view ambiguous and stressful circumstances as a challenge rather than a threat. Kobasa, Maddi, and Kahn (1982) have also done research on the positive effects of hardiness on health as have Lambert and Lambert (1987). The Lamberts stated that perhaps a health promotion focus for nursing would be to train individuals for hardiness and help them increase their level of commitment, control, and sense of challenge.

Murdaugh and Hinshaw (1986) reported an interesting finding from their research on personality and preventive health behaviors. They found that future-oriented individuals may perceive greater barriers to undertaking health care activities and participate in less exercise than present or spontaneous-oriented individuals. Future-oriented individuals are too busy working for tomorrow and worrying about the future while spontaneous-oriented persons try out new things and take the time to take care of themselves.

Optimism, hardiness and present-orientation seem to be positively related to healthy behaviors in all of the research reviewed. These are relatively new constructs being studied with relation to health. More research is needed but the prospects look promising.

Self-determinism and self-efficacy

Cox (1985) reviewed the literature on health behavior and predicting health behaviors. She pointed out that it is important for individuals to feel competent and self-determining in their interaction and adaptation to the environment. Intrinsic rewards result from this positive interaction. Individuals who have an intrinsic motivational system tend to perceive themselves as competent, respond to internal cues, make active, independent decisions and are self-determined. An individual's extrinsic motivational system involves response to external cues, little active decision making and engagement in activities for which the rewards are more meaningful than the feelings involved. Cox went on to develop and test a tool for measuring health self-determinism.

Self-efficacy is another concept which has been recognized as a predictor of health behavior change and maintenance. Strecher, DeVellis, Becker and Rosenstock (1986) in their article stated that self-efficacy refers to the beliefs about personal capabilities of performing specific behaviors in particular situations. Efficacy expectations refer to beliefs about how capable one is of performing a particular behavior and achieving a particular outcome. Efficacy expectations are learned from four major sources which include past performance accomplishments, vicarious experience which includes

observation of events or people, verbal persuasion such as that from a health care provider, and physiological arousal state (i.e., anxious and tense state impairs performance).

The authors found in their review that high levels of self-efficacy are necessary to maintain change related to health behaviors and that methods to improve self-efficacy tended to enhance health promotion programs. Kirscht (1983) and Davis et al. (1984) also reported on the importance of self-efficacy in health behavior change. Internal feelings of competence in oneself along with the belief that one will succeed at a task appear to be important factors in changing health behavior.

Summary

It is quite obvious from the review of the literature that the personal feelings one possesses along with the perceptions one has regarding personal effectiveness as an individual play a big part in the behaviors participated in with relation to health. Although some of the studies reviewed present mixed results, overall, it appears that internality, hardiness, optimism, and an overall positive perception of one's competence and self-efficacy tend to be related to positive health behaviors.

Environmental Factors

Environmental factors have been defined earlier in this review as those factors which do not fall into the realm of educational or personal self. This envelops a

large area of influencing factors ranging from social support to media effects. In the following review, some of the major environmental concepts affecting health behavior are discussed.

Social support

The area of social support has been found to be a positive factor for many health behaviors in the research. Wallston et al. (1983) in their review of the literature on social support and physical health pointed out that there is a direct relationship between adherence and social support. Social support increased an individual's motivation to adhere to a particular behavior. Group support was found to be particularly helpful for decreasing smoking. The other literature on the buffering effect of social support on stress remains inconclusive due to many other life stress events impinging on the overall situation.

Kerr (1985) found that when social support was not provided, any of the strategies she attempted to help control levels of blood pressure simply did not work. Pender and Pender (1986) found that individuals supported either verbally by health care workers or by their families were more likely to continue with a regular exercise program. Pill and Stott (1985) found that the level of perceived social support especially from relatives, was associated with preventive health behaviors among working class women. Calnan (1985) also confirmed

this finding and included the number of close friends as an important social support element.

Abella and Heslin (1984) in their research on preventive health behaviors found that students, when evaluating the influence of others on their health behaviors, felt there was little if any connection. The presence of support of others, however, tended to be the most highly correlated factor for positive health behaviors in these individuals.

Sometimes the influence of others has a negative or inhibiting effect on the health behavior of an individual. Barnes and Nybo (1978) pointed out that well-meaning friends and relatives can sometimes undermine our efforts to change a behavior. For instance, a friend may offer us cigarettes when we are trying to quit or a mother can encourage us to eat all our favorite foods even though these are the exact ones we are trying to avoid.

Numerous other authors speak of the importance of social support or social influence on our health behavior (Coulton, 1978; Dishman et al., 1985; Gottlieb & Green, 1984; Kirscht et al., 1981). Whether a positive or negative factor, it does appear to be a potent one in helping to change or influence the initiation, performance and maintenance of health behaviors.

Industry and government influence

Industry and the worksite can play a part in the health behavior change of its employees and the community.

McGuire (1984) discussed the punitive and supportive strategies used by governmental and non-governmental agencies which affect health behaviors. Regulations and laws are made to prohibit the use of illegal drugs. Age restrictions are placed on the sale of cigarettes and alcohol. Smoking is restricted or banned in certain government buildings and military installations and industrial settings. Health exams, chest xrays, and immunizations are required prior to holding certain jobs. Government and industry also support funding and research for projects which are health-promoting such as school lunch programs.

Individual companies may help to promote health by having low calorie, low cholesterol meals in their cafeterias (Ulmer, 1984) or by offering worksite physical fitness programs or discounts to community clubs (Bernacki, 1987; Ulmer, 1984). Some companies promote health through competition at the worksite (Brownell, Cohen, Stunkard, Felix & Cooley, 1984). These authors reported on a competitive weight loss program between three banks. Each of these companies reported increased morale and employee relations in addition to an average weight loss of 5.5 kilograms.

Windsor and Bartlett (1984) discussed the use of employee self-help groups for quitting smoking which included peer support, monetary incentives, and a multitude of self-help materials and programs. Berg

(1986) identified several other ways in which industries can provide incentives for their employees to lose weight, quit smoking, and stay healthy in general. These included the use of not only monetary incentives but providing time during work to exercise or for health seminars, and offering complete physiological exams and screenings. As seen by these few examples, the industrial and governmental components of our society can offer an incentive and, in some cases, influence individuals to make positive changes toward healthier behaviors.

Media effects

The use of mass media has been a strategy for health promotion and behavior change since its inception. Television, radio, newspapers, music, and now videos have been used to influence individuals. Horowitz (1985) spoke of the potent influence of television on promoting self care by providing a stimulus for lifestyle and habit formation. Stanton (1985) in her article on marketing strategies for health promotion stated that because one's health is such an intimate concern, any reference to it on radio and television is most likely to draw the attention of the individual. She also stated that radio and television are usually generous in providing public service spots to emphasize community health care resources.

Ulmer (1984) pointed out the profound impact television can have on influencing behavior with regard to

smoking, drinking, and eating. During an average hour of prime time television, there are at least nine references to food and drink. Food advertising accounts for one-quarter of the primetime and weekend commercials and nearly one-half of these are for sweets, snacks, and "junk" foods (p. 796).

Zentgraf (1986) reported on a study done on nutrition education in the Republic of Germany aided by the use of newspaper, television, and local groceries. The average weight loss of the seventy individuals during the four week test period was 5.8 kilograms. In spring of 1987 in South Florida, the Publix supermarket chain sponsored a Rotation Diet promotion. Each week certain food items were featured and discounted along with having information available to customers on the diet. Items on the shelves were marked with the Rotation Diet trademark to make shopping easier for those individuals on the diet. Dieters were encouraged to weigh in each week at the store to help that particular Publix win the competition for pounds lost.

Macoby et al. (1977) reported on the effects of a multimedia, mass-media approach used in the Stanford Heart Disease Prevention Program. Television, newspaper and radio spots in both English and Spanish were presented covering diet, weight loss, smoking, and exercise at various times over the two year follow-up period. These were combined with an intensive instruction program. The

authors concluded that a mass media campaign of this nature was effective in causing a change in both knowledge and behavior. Meyer et al. (1980) again in reviewing much of their own research stated that the use of media alone takes much longer to produce change while media along with intensive instruction produced a more immediate and stable change in behavior. Levanthal et al. (1980) in critically examining the same study said that the authors came to inappropriate conclusions regarding the effects of mass media. They found that the high risk individuals in the media-only group showed no reduction in risk and that generalizations of the effects of media were unfounded.

Ross (1981) stated that using the media as a means of providing awareness knowledge to the public is appropriate. In this way the public can be sensitized to the health issues that are prevalent today. The actual impact of media on behavior however is questionable. Kirscht (1983) and Bettinghaus (1986) supported this view. Bettinghaus emphasized that media have few strong and lasting effects on behavior and that other strategies along with media are necessary for changing behavior on a long term basis.

Although media appear to play an important role in increasing the awareness and knowledge of health care issues, the impact of this strategy on behavior is inconclusive. It appears that at present, media provide a way to reach large numbers of people quickly and present

information and ideas which can, but not necessarily do, have an impact on their lifestyles.

Other influences

Coulton (1978) discusses the influence of cultural norms on health behavior which is closely tied to the impact of social support. Certain practices are supported by the Hispanic and Mexican-Americans, for example, with relation to foods, herbs for medicine, and alcohol consumption. Lasater (1986) examines the role of the church in providing behavior change programming on major cardiovascular risk factors. Sixty-five percent of the churches polled in Rhode Island were positive in their desire to provide these services to their congregations.

Public figures have been prominent in promoting health. Jane Fonda has been quite successful in the world of aerobic exercise with a variety of video tapes and programs. Diet manuals abound such as those by Victoria Principal. And lastly, the world of fashion has had a definite influence on not only the female body, but also the male body. Tapered, slinky, fitted, short, clingy, revealing, hugging, and sensuous are but some of the adjectives which have taken the American public by storm and put many on a "lo-cal", "get fit" craze.

Summary

Environmental factors ranging from social support to mass media play a major role in influencing an individual's decision making with relation to health. The

type of influence these effects have vary and may be positive or negative. The research seems to point out that there are numerous interacting variables which make it quite difficult to predict an effect from any one factor. As research tools become more specific and health psychologists become more cognizant of the motivations for healthy behavior, the educational, personal, and environmental factors influencing health will become more clear.

Specific Health Behaviors

Numerous studies have been done on specific health behaviors to determine if characteristics can be identified for individuals who seem to be successful with those behaviors. For this research, the behaviors of diet, weight loss, exercise, and smoking are identified as health behavior change areas of concern and therefore research in these areas will be reviewed briefly.

Dietary Behaviors

Pennington (1986) in an article on dietary practices and patterns of Americans stated that on the whole, consumers are aware of necessary modifications of caloric intake, and restriction of sodium, fat and cholesterol. Teenage girls, the elderly, and low income groups were identified as those individuals most likely to develop problems from inadequate diet. Calnan (1985) found that

individuals who tend to diet for health reasons were young, female, and married.

Weight Control

Weight loss and characteristics of the overweight have been researched for many years attempting to correlate numerous variables. A positive correlation has been found between weight control and physical activity (Blair, Jacobs, & Powell, 1985) and not surprising is the finding that those who are overweight are less likely to exercise on a regular basis (Pender & Pender, 1986). Muhlenkamp and Nelson (1981) found that those who participated in a weight loss program tended to have an internal locus of control.

Laffrey (1986) found that 92% of the individuals in her study judged to be overweight, perceived themselves as being overweight. They did not however, perceive themselves to be unhealthy. Laffrey pointed out that this may be one of the problems in focusing on risk factors related to being overweight. If the individuals do not perceive themselves as unhealthy, focusing on risk factors will have no impact.

Schoenborn (1986) reported on the results of the National Health Interview Survey which collected data from the U.S. population in 1977 and 1983 on the Alameda County health habits (see Wiley & Camacho, 1980). Less than one-fourth of the men and women reported being within 5% of their recommended weight. Twenty-six percent of men and

22% of women were 20% or more above desirable weight. Women weighing 30% or more above desirable weight were most commonly aged 45-64, had less than 12 years of education, had low income, and were black. Men between 45-64 comprised the largest group of individuals 30% or more overweight.

Exercise

Schoenborn (1986) also reported on statistics relating to exercise in her report. Men are more likely to be active than women in every age group with 34% of men considered very active as compared to 22% for women. Men and women with more than twelve years of education and higher incomes tend to exercise more. Calnan (1985) also found that those who exercise tend to be professional or semi-professional, educated, and younger in age. Those who exercised on a regular basis tend to place a higher value on health (Walsh, 1985) and identify more advantages to being personally physically active (Godin, Shepard & Colantonio, 1986).

Dishman et al. (1985) reviewed the literature on the determinants of physical activity and found that feelings of enjoyment and well-being tend to motivate individuals to maintain their exercise patterns. Those who tend to exercise more consistently are those with an internal locus of control, who receive social support and personal reinforcement, are either male, young adult, working women

or single parents, well-educated, self-motivated, and live in the West and Midwest.

Smoking

Group social support was found to be an important factor in encouraging individuals to quit smoking (Wallston et al., 1983). Shipley (1981) found that those who had quit smoking or cut down considerably were those who smoked out of habit or received little pleasure from the experience and could find other ways to relieve their tension. Kasl (1974) found that former smokers were most often married men, churchgoers, upper income, had friends who quit or didn't smoke, were light smokers, started later in life, and anticipated less trouble with quitting. Recidivists were more likely to be low income females whose friends were smokers. According to Schoenborn (1986), those who were more likely to smoke were less educated, low income, black, and male.

Summary

In general, those individuals who seem to practice more preventive health behaviors are white, most likely female, well educated, upper income, employed, and have a network of social support. Those who appear to be the least healthy and practice few if any preventive health behaviors are black females with low income and little education (DeRoos & Coder, 1977; Gottlieb & Green, 1984; Nathanson, 1977; Gottlieb & Green, 1984; Vebrugge, 1985; Yoder, Jones & Jones, 1985).

Review of Methodology

The next major area in the literature review is various aspects of methodology particular to this study. These will include the use of surveys in exploratory research with an emphasis on telephone surveys and the research method of content analysis.

According to Hogstel and Saynor (1986), exploratory research has three purposes. The first is to discover significant variables in the field situation. The second is to discover relations among the variables, and the third is to lay groundwork for later more systematic and rigorous testing of hypotheses (p. 70). In this research, telephone surveys will be used to discover significant variables related to the motivations of individuals pursuing healthy behaviors. Then through the process of content analysis, relationships among the variables or specific variables themselves will be identified to develop hypotheses for further testing.

Telephone Surveys

History

Telephones initially were ignored and discouraged for use in research (Frey, 1983). They were used more for follow-up in studies to prod nonrespondents of surveys to return their mail questionnaires, to give advance notice of questionnaires to be sent and as a last resort if the individual could not be contacted in person. The

increased use of telephones for the actual surveys instead of follow-up occurred for several reasons. First, there is widespread distribution of telephones. According to Frey (1983), only five states had less than 90% coverage when his book was printed. A wide array of research has been done on telephone surveys, especially by Dillman (1978) who provides ample information on random digit dialing techniques. Also, traditional methods of survey research became less accepted because of time, money, inability to find people, and having to go to undesirable locations. And lastly, telephone technology has made extensive advances with Wide Area Telephone Service (WATS) and Computer Assisted Telephone Interviewing (CATI). These technological advances have made survey research by phone much easier.

Norms of telephone usage

There are some norms of telephone usage Frey (1983) identified which may have an effect on surveys made by phone. First, people have been conditioned to answer a phone that is ringing. To leave it ringing creates tension and suggests to the individual the possible loss of an important social engagement. Answering the phone obligates the individual to respond at least in some way to the caller, even if only to grunt. There is also an initial feeling of trust implied that the call is motivated by a genuine desire for help from the respondent. For survey research, this points out the

importance of relaying the purpose of the call in the initial statements and hopefully meeting the expectations of the respondent. Another norm of phone usage is that the caller terminates the call, and hanging up suggests "interactional suicide" (p. 16). All these norms seem to be positive factors for telephone surveys, at least initially.

Comparison with other methods

A comparison of telephone, face-to-face, and mail surveys can be made to show the advantages and disadvantages of using the telephone for survey research. Table 2.1 displays the comparison of the three methods of collecting data. Each is rated according to information compiled from several sources (Dillman, 1978; Fink & Kosekoff, 1985; Frey, 1983; Holm & Llewellyn, 1986). As shown, the telephone compared closely with face to face and is actually better for amount of time necessary and sample coverage.

Guidelines for optimal usage

Frey (1983) pointed out that the time of telephone surveys may range from a few minutes to an hour, however, as the time increases beyond twenty minutes, the changes of incomplete results also increases (p. 47). Few terminations were found on calls of twenty minutes or less. The best times of the day to make calls has been found to be between 5:30pm and 9:00pm on weekday evenings, 9:00am to 2:00pm on Saturdays, and on Sunday evenings.

TABLE 2.1
Survey Method Comparison

	<u>Phone</u>	<u>Face-to-Face</u>	<u>Mail</u>
1. Cost	middle	highest	least
2. Personal	middle	greatest	least
3. Time for implementation	least	4 mos. or more	3-4 mos.
4. Response rate	80-85%	>85%	60-70%
5. Noncontact rate	39.1%	least	?
6. Geographic area	wide	clustered	wide
7. Quality of information	good	excellent	good
8. Complexity of questions	must be simple	may be complex	simple
9. Visuals	impossible	excellent	possible
10. Response control	fair	good	impossible
11. Reliability & validity	fair	best	fair
12. Ability to probe	good	excellent	fair
13. Coverage of sensitive topics	good	excellent	fair
14. Sample coverage	excellent	may be limited	depends on quality of lists
15. Interviewer effects	middle	most	least
16. Confidentiality	middle	least	most

The best time overall appears to be 6:00pm to 7:00pm EST on weekday evenings. The best time of the year to accomplish telephone surveys is January through April. The worst times are June through August due to vacations and increased activities outside the home. December is the overall worst month due to the holidays. It is also recommended to avoid special events when making phone contacts, such as Monday nights during football season for male participants.

Pre-contacts help to introduce the caller to the respondent and arrange for good times to contact (Polit & Hungler, 1983). This can be done by phone or may be done with an introductory letter. The letter should be on letterhead, be brief, give an introductory statement, tell who will be calling, why the respondent was selected, a description of the research, a guarantee of confidentiality, the length of the interview, and the opportunity to refuse and ask questions (Frey, 1983). The respondent should be given the opportunity to reschedule if the time is inconvenient when the initial call is made.

Summary

The telephone provides a convenient and fairly reliable way to collect data for surveys. There are certain criteria which need to be followed as to etiquette and times to use for maximum response. There are some disadvantages when compared with face to face and mail-outs but the advantages and convenience outweigh these.

It does appear that the widespread use of the telephone for surveys is here to stay and can provide a wealth of information for research purposes.

Survey Development

Guidelines

Some guidelines for questionnaire and survey development emerged from the review of the literature. Many of these guidelines pertain to question development and the overall format of the interview. Gardner (1978) suggested ten rules for the wording of the main questions in interviews which combine the work of many authors.

These included:

1. Use familiar words, phrases and style.
2. Use simple words and simple straightforward sentences.
3. Be specific, without too much elaborate detail.
4. Ask concise questions that cannot result in ambiguous answers.
5. Be precise and not vague.
6. Keep it short (aim for less than twenty words per question).
7. Avoid bias and leading questions.
8. Do not make presumptions.
9. Be realistic and not hypothetical.
10. Don't make too many rules. (p. 38)

Frey (1983) suggested some additional guidelines for drafting questions. Those not mentioned which related to telephone surveys included

1. Avoid "loaded" questions that suggest to respondents that one answer is preferable to another.
2. Avoid the use of inflammatory words such as "racist" or "exploitation."
3. Avoid slang and colloquialisms.
4. Be precise and specific in the use of concepts.
5. Be precise and specific regarding time frames either as a period of recall or as a time limit to a certain behavior.
6. Be careful not to assume behavior or knowledge on the part of the respondent.
7. Avoid double questions where two or more issues are mentioned. Split into two questions if necessary.
8. Avoid all inclusive terms such as always or never.
9. Allow for a "don't know" or "no answer/refusal" category.
10. Use the technique of splitting a complex question into two or more simpler parts to eliminated respondent confusion and error. (p. 126)

Interview format

The format of the interview, that is, the sequencing of the questions is also important and affects the responses received. Question wording and sequence are extremely important to telephone surveys because of the amount of concentration necessary from the respondent (Dillman, 1978). Although some authors stated that demographic data should be saved until the end of the interview (Frey, 1983; Polit & Hungler, 1983), there is evidence that it is best to place this information in the beginning of the interview. This gives the interviewer a quick way of gaining rapport with the respondent since this type of information is easily answered and generally nonthreatening (Babbie, 1973; Fink & Koseloff, 1985).

The first few questions should be interesting and simple, assuring the respondents that they will not become bored or overwhelmed. If at all possible, questions should flow from one topic to another, or a bridging statement should be used to make the transition. Questions with a relatively sensitive nature should come when rapport is strongest and before the individual has a chance to get bored or impatient. This usually occurs during midway in the interview or just after that. The response to one question should not be influenced by the previous question. The overall sequence should make sense to the coder so that analyzing the information is not an impossible task.

Although there is much more information related to surveys and interview development, the basic information required for a telephone interview has been reviewed. The next are of review relates to content analysis of the information collected during the interview.

Content Analysis

Content analysis has been defined by Krippendorff (1980) in several ways. It is "a research technique for making replicable and valid inferences from data to their context" (p. 21) and "a method of inquiry into the symbolic meaning of messages" (p. 22). He also defined content analysis as a "research technique for making inferences by systematically and objectively identifying specified characteristics within a text" (p. 23). Polit and Hungler (1983) defined content analysis as a "method for the objective, systematic, and quantitative description of communication and documentary evidence" (p. 344). Kerlinger (1964) said that content analysis is a "method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables" (p. 544).

According to Holm and Llewellyn (1986) there are two levels of content analysis. One is the manifest level which involves the direct coding of what is said or observed. The second level is the latent level which involves the coding of the perceived meaning of the response or the perceptions of the underlying dynamics of

the response. In this research both levels of content analysis were used, but the first level was most often applicable.

Taylor and Bogdan (1984) listed the steps in the coding process for a content analysis. These include

1. Develop coding categories (themes, concepts, interpretations).
2. Code all data, refine coding scheme. (Make codes fit the data, not vice-versa)
3. Sort data into coding categories.
4. See what data are left--some will fit in existing categories; no study uses all data collected.
5. Refine your analysis. (p. 136)

Finally, some means of quantification of the common materials is developed. This usually involves an enumeration system, for instance, the number of times a particular theme presents itself. The use of matrices, graphs, and cross-breaks are helpful in looking for patterns and themes that might present themselves in the data. Cross-breaks are numerical tabular presentations of data, usually in frequency or percentage form in which variables are juxtaposed in order to study the relations between them (Kerlinger, 1964; Miles & Huberman, 1984).

CHAPTER 3

DESIGN AND METHODOLOGY

This chapter is divided into two major areas. The first part covers the design and methodology for the pilot along with the development and revision of the interview protocol. The second part covers the design and the methodology for the actual study in more depth than presented in Chapter 1 with more detail on the analysis of the data.

The Pilot Study

Interview Protocol Development

One of the purposes for doing survey research is to identify motives for a particular behavior. In the context of survey research, a motive refers broadly to the conditions or reasons that lead an individual to behave in a particular way (Polit and Hungler, 1983). In this pilot study, the motivating or influencing factors for health behaviors were investigated through a series of questions. Since the purpose of the pilot was to refine and clarify the questions for the research, a semi-standardized approach was used in which the researcher was permitted

leeway in asking the questions, clarifying them for the volunteers, and probing so that the clearest questions could be developed.

Concepts

The interview protocol was developed by the researcher with three major concepts as a basis for the questions. The three concepts of interest were 1) education, 2) the personal self, and 3) the environment.

Education, in the context of this research, refers to the process of obtaining information which may be a potential motivator for an individual to make a health behavior change. This process can involve written, oral, or visual cues which influence the individual. In this research it included the process of taking a risk assessment itself, the written report explaining the risks identified, the explanation of the risks from a health care practitioner, or discussing the results in a group setting.

Personal self involves the individual characteristics and internal feelings and beliefs which impact on how that individual behaves in regard to health. As previously mentioned, there have been numerous concepts already identified such as locus of control, health beliefs, health values, self-esteem and self-actualization which this researcher would relate to the personal self.

Environment, for purposes of this research, includes all other aspects which do not fall into the realm of the

educational process or the personal self. These areas might include such things as social or family support, monetary rewards, work factors, demographics, cultural effects, and neighborhood surroundings which act as motivators for individuals. These concepts are dynamic, and at any point in time, one might be more important than the others for a particular individual as a motivator for health behavior change.

Most research which has been done has looked at one of the various concepts, such as locus of control, by administering an instrument to the individual to measure that concept. The results then are correlated with either the positive or negative health behavior changes. For example, internal locus of control might be associated with a healthy behavior (Abella & Haslin, 1984).

In this pilot, the individuals were asked directly for the factors which they perceived having influenced their health behavior changes. The interview protocol purposely was designed to begin somewhat open-ended or general. In this way it was possible to see what individuals identified as their own motivators, if in fact they could. Results from these interviews formed the basis for the interview used in the main research study.

Questions

A review of the literature on health behavior was the basis for each of the questions in the pilot interview. The three major concepts, education, the personal self,

and environment provided a framework for classifying each of the questions. The demographics included the date interviewed, sex, occupation, education, ethnic group, and age range. There is some research available concerning the effects of gender, age and education on the health behaviors of individuals (DeRoos & Coder, 1977; Vebrugge, 1985; and Wiley & Camacho, 1980). Occupation and ethnic group are less documented. For identification purposes, the last four digits of the social security number were used.

The next area of information concerned the type of risk appraisal or risk assessment taken, when taken, whether it involved a formalized program that followed the risk assessment, and when that was completed. The type of risk appraisal and the nature of the post assessment program may or may not have an effect on the behaviors of the individual. Some risk appraisals are formal and very extensive, with long, in-depth, specific feedback tools provided to the participant. Others are home-made assessments involving the same type of information but perhaps in less depth and with less cost to the institution using them. No research could be found that identifies one form of appraisal as being superior over another for amount of behavior change occurring post appraisal. It is possible that the actual appraisal is not important, but the critical factor may be feedback and follow-up that the individual gets after being told of

risk factors. Therefore a question was included identifying whether a formalized educational program followed the risk appraisal and the type of program. The date the appraisal was taken and the termination of the program allow calculation of the lapsed time. This is important for determining maintenance time and whether one can predict a critical time when behaviors start to wane.

The next set of questions involved the risk appraisal process and the transfer of information regarding the risks. Figure 3.1 presents the pilot questions one through fifteen. The first question, "Why did you take the risk appraisal in the first place?", was asked to find out if the individual had an underlying motive such as previous health behavior change, or recent experience prompting interest. "What do you see as the purpose of a risk appraisal?" was included to see if there are any misconceptions regarding these instruments. "How did you feel after getting the results of the risk appraisal?" was asked because there is concern that risk appraisals may have a negative or frightening effect on individuals and in fact might be detrimental to one's health rather than helpful (Wagner et al, 1982).

To identify how the assessment results were presented and how the participant reacted, the following questions were asked: "How were the results of the appraisal made available to you? Was getting the results this way of benefit to you? Why or why not? Do you understand your

1. Why did you take the risk appraisal in the first place?
2. How do you see as the purpose of a risk appraisal?
3. What did you feel after getting the results of the HRA?
4. How were the results of the HRA made available to you?
5. Was getting the results this way of benefit to you? Why or why not?
6. Do you understand your results? Agree with them?
7. Would you be willing to share the results of your risk appraisal with me?
8. Changes made- yes/no. What? Maintained? For how long?
9. Was there a person or persons that influenced you to make or not make the change? In what way?
10. Has your place of employment influenced your health behaviors? If so, how?
11. Has there been an event or experience that helped you to change or not change your behavior? If so, what?
12. Do you feel money (or lack of money) had any effect on whether you did or did not make a change? Maintain change?
13. Were there things that were available or not available to you that you feel helped you to change or hindered you from changing? Helped to maintain change?
14. Are there other factors that helped you make a change or maintain a change? That hindered you from making or maintaining a change?
15. What are the personal characteristics or feelings about yourself which helped or hindered you from making a change? Maintaining that change?

Figure 3.1

Pilot Questions 1-15

results? Do you agree with them?" The rationale was to identify whether participants received individual, group, or mailed feedback and if they felt adequate explanation was given, or perhaps a better method of feedback could be beneficial to them. Whether they agree with their results might have some impact on whether they made any changes.

Next the participants were asked types of health behavior changes made, if any, whether they were maintained, and for how long. Since the research study was more interested in the reasons for making health behavior changes, the quantitative risk data were not collected. However, since it may be interesting to correlate this information at a later date, participants were asked if they would be willing to share the results of their risk appraisal at a later date.

All of the items described so far in the interview protocol were regarded as non-threatening and straight forward. The questions from this point on were more open-ended and required more thought on the part of the respondent. The respondent was not forced to make a choice or identify something if not able to do so. The researcher probed further if there was some doubt that the question was not understood or could have been worded in another way for clarification. The first questions involving environmental factors were, "Was there a person or persons who influenced you to make or not make the

change? In what way?" Those who might be identified were spouse, peer, significant other, relative, and self. There is abundant literature regarding the effect of social support mechanisms on health behaviors which is reviewed in detail in the review of the literature.

The second question, "Has your place of employment influenced your health behaviors and if so, how?", was included to see if employees identified the work environment as important in their health status and if it was identified as a positive or negative factor. Employers have become involved with employee health not only because of insurance claims and workmens' compensation but also in prevention through employee health programs, fitness centers, and incentives for health promotion (Bernacki 1987; Brownell, Cohen, Stunkard, Felix, & Cooley, 1984; and Mcguire 1984). When employee productivity appears related to stressors in the work environment, employers want to look at the causes. And if well-balanced, low calorie meals provided in the employee cafeteria are effective in encouraging necessary weight loss, this would also be important for the employer to know to help promote healthful behaviors.

"Has there been an event or experience that helped you to change or not change your behavior? If so, what?" was asked to identify any critical life events individuals saw as having an impact on their health. Certain events like the death of a friend or family member may cause an

individual to initiate some changes in his or her life, among which might be a health behavior change.

To determine if finances had any impact on one's participating in healthy behaviors this question was included: "Do you feel money or lack of money had any effect on whether you did or did not make a change or maintain a change?"

Facilities or other environmental factors may have an impact on whether an individual is motivated to change. For instance, living across the street from a park with a jogging path may motivate an individual to run regularly. Living with a roommate who owns exercise equipment and offers it for use might be an incentive to start an exercise program. Living in a complex which has an olympic size swimming pool may encourage one to swim for exercise. Working at a company which has a gym on the premises might encourage employees to exercise at lunchtime. For this reason the question was included, "Were there things that were available or not available to you that you feel helped you to change or hindered you from changing?"

To insure that no factors were inadvertently omitted or to give individuals an opportunity to add things they may have missed, additional questions were added. These included "Are there other factors that helped you make a change, maintain a change, or hindered you from making or maintaining a change?"

The last question included was the most probing and personal one and therefore was purposely saved for last. "What are the personal characteristics or feelings about yourself which helped or hindered you from making a change? Maintaining that change?" These questions were asked to see if individuals identified any internal factors such as goal achievement, persistence, self-image, optimism, and personal satisfaction, or if it was even possible for people to have that kind of insight in regard to their health behaviors. Appendix B provides the complete interview protocol for the pilot.

Subjects

The subjects selected for the pilot were employees of a large hospital in the Southeastern United States who had been enrolled in a health assessment and fitness program. A personalized letter was sent along with a mailout from the fitness program coordinator to individuals who had participated in the program asking them to volunteer for the study. A copy of this is available as Appendix C. A pre-addressed post-card was enclosed for reply should the individual prefer not to telephone. Thirty individuals replied volunteering to participate. Of these 30 only 14 could be contacted during the pilot research. Volunteers were guaranteed confidentiality. They were contacted once by phone to acknowledge their responses, provide introductions, and to identify convenient times to contact them for the telephone interview.

Of these 14 individuals, 3 were men and 11 were women. Most of them were between 31 and 40 years of age. Reasons for noncontact of the other 16 included: no answer after several (at least 3) attempts (4); busy after several attempts (3); left message, no return call and unsuccessful attempt to reach later (5); unlisted phone number (1); refused when called (1); and long distance and chose not to use (2). Occupations ranged from nurse to financial administrator. The elapsed time between the follow-up and the appraisal ranged from 3 months to 1 1/2 years. All the individuals made changes; however only 9 maintained these changes at the time of the interview. Two of these had made changes in behavior prior to the appraisal and 2 of the 9 maintained the diet or weight loss, but not the exercise at the time of the interview.

The instrument used to appraise the risks of the subjects was a commercial HRA called Inner View described in Appendix D. This HRA is an 11 page questionnaire with eight actual pages of health history questions. Each individual received the results in a sealed packet containing a one page summary sheet and 10 pages of recommendations for change or improvement. A "health age" and an "achievable age" were calculated for each individual and presented at the end of the recommendations. The fitness coordinator did not receive

individual participant results, but a summary of the total group's results.

Procedure

Individuals were contacted by telephone. According to Holm (1986), telephone surveys yield quality information just as personal interviews do, and the response rate is high. Phone contact also provides fairly reliable and valid information, the ability to probe, and the ability to cover a larger geographic area. Individuals were contacted at their convenience. The interview took approximately fifteen to twenty minutes to complete. The researcher recorded the responses as completely as possible for analysis.

Analysis and Results of the Pilot

An analysis of the pilot questions and data was completed to determine if the language, structure, format, and content of the questions elicited the desired information. The answers to the questions were analyzed for trends and frequent responses were recorded as a beginning coding system. This beginning coding scheme was used to collect data during the research study. (see Appendix G for Interview Data Sheet discussed in the revision of the interview protocol) A summary of the results of the pilot appears in Appendix E.

Revision of the Pilot Interview Protocol

The purpose of the pilot was to test the questions for clarity and significance so that they could be

revised, deleted, or new questions added. Each question was reviewed individually to detect the need for changes, deletions or additions.

Certain information was deleted from the preliminary data of the pilot. This included program information and date completed, since the subjects for the subsequent research were not exposed to a formal program by the hospital administering the health assessment.

Question number one, "Why did you take the risk appraisal in the first place?" was retained. It seemed evident from the pilot that there were three basic reasons for taking an appraisal. These were for obtaining information, seeking evaluation, or improving motivation. Obtaining information included obtaining lab results and values, having risks identified, and learning of ways to improve. Seeking evaluation related to the individual wanting to know where they stood, or just how healthy or unhealthy they were. Improving motivation seemed to relate to getting that extra push to get started and perhaps doing it in the company of support mechanisms. It was felt that in the subsequent research, one of these areas would become more evident or all three reasons would prove to be equally distributed and important.

"What do you see as the purpose of a risk appraisal?" was deleted, since all the subjects were aware of the purposes. "How did you feel after getting the results of the risk appraisal?" was retained. There did appear to be

a range of emotions from depressed to elated. Since previous research was concerned with a possible negative effect of risk appraisals, the investigator felt it would be beneficial to test this on a larger sample.

Questions four through seven were deleted. All the individuals received the results the same way. They stated that they understood and agreed with the results, and the results were a benefit to them. The real purpose of these questions was to determine the preferred method of receiving information. Because these questions did not elicit that information, a new set of questions was added. These included, "Did the information you received affect (help) you in any way? How could it have been more helpful to you or how could it have meant more to you?" These questions provided the individuals with a chance to identify any educational factors related to the risk assessment process which affected their health behaviors.

"Would you be willing to share your results with me?" was deleted because the researcher had copies of the appraisal results on all individuals in the research sample. Question number eight on behavior changes made or not made remained the same for data collection. Question number nine regarding person(s) influencing change was left in also. Added to this was a question relating to role models, "Did anyone serve as a role model for you?" The rationale for this was to see if individuals in fact had role models to follow in the change process relating

to health behaviors. It also served as another way to identify influencing individuals.

"Has your place of employment influenced your health behaviors?" was retained especially since the majority of individuals felt it did, for a variety of reasons. Stress was seen as a major factor related to work. For continuity, the question was also moved to immediately after the question on changes made. Question number eleven was retained because varied events were being identified. A possible trend might develop when more individuals were questioned.

Questions number twelve and thirteen were deleted. No one identified finances as having a significant impact on whether changes were made or not made. The question on facilities or things available or not available was deleted since no particular trends evolved and the question overlapped with others. Two of the men in the pilot sample said that possibly money deterred them from belonging to a health spa or buying good exercise equipment, but this did not inhibit them from exercising.

Question number fourteen was retained since other factors were identified as important such as time, age, and media, and a pattern might develop. Question number fifteen also remained in the revised protocol because there were factors identified as internal or personal characteristics. This involved one of the three major

concerns of the investigator and was felt to be an important question.

Three additional questions were added to the revised protocol. The first one was, "If you accomplished a change, what do you feel helped you the most? If you did not, what hindered you the most?" This was added to see if individuals perceived one thing as having more of an influence on their health than others.

The next question added was, "If you could be offered one incentive that would encourage you to change, what would that be?" This was included to determine if a factor could be offered to individuals to encourage change. Because finances were not considered to be important, was there some other material factor which might promote health behavior change? Incentives in the workplace have been investigated, but there may be other incentives outside of this setting.

And lastly, a question was added regarding how healthy or unhealthy an individual perceived himself or herself to be. This was, "Overall, do you consider yourself healthy or unhealthy? On a scale from 1-10, with 1 being unhealthy and 10 being the healthiest, rate yourself." This was added because research by Laffrey (1986) on overweight individuals showed that they did not perceive themselves to be unhealthy even though they agreed that they were overweight. Laffrey found that this may be a problem with risk identification and trying to

encourage individuals to change their behavior when they do not consider being at risk as unhealthy. A copy of the entire revised interview protocol is available as Appendix F. Figure 3.2 portrays the revised interview questions numbered from one to twelve.

The Research Study

Subjects

The hospital administering the health risk assessment provided screenings for a large non-medical corporation in Southeastern Florida. The screening, including blood work, was offered by the company free of charge to the employees who wished to participate. The hospital identified 61 individuals from this screening who were at risk for cardiovascular disease and in need of telephone follow-up at a later date. The individuals were notified at the time of the screening to obtain follow-up on the particular problem identified. Recommendations were also discussed such as diet and exercise. The criteria used to determine cardiovascular risk included any one or more of the following: overweight by more than forty pounds, a diastolic blood pressure greater than 100, a systolic blood pressure greater than 180, a blood glucose greater than 150, anemia, a blood cholesterol greater than 250, and a cholesterol ratio greater than 10.

The researcher offered to do the follow-up for the hospital if the subjects could then be asked to

1. Why did you take the risk assessment in the first place?
2. How did you feel after getting the results of the assessment?
3. Did the information you received affect (help) you in any way? How could it have been more helpful to you? or How would the results have meant more to you?
4. Were changes made in. . . , maintained. . . length of time? (diet, weight, exercise, smoking, drinking, stress)
5. Has your place of employment influenced your health behaviors? If so, how?
6. Was there a person or persons who had an impact on you to make or not make a change? How? Did anyone serve as a role model for you?
7. Has there been an event or experience in your life that helped you to change your behavior? Not change behavior?
8. Are there any other factors that helped you to change or had an impact on your health behaviors?
9. What personal feelings or internal things can you identify about yourself that helped you to make the changes? Or hindered you from making changes?
10. If you accomplished a change, what do you feel helped you the most? If you did not, what hindered you the most?
11. If you could be offered one incentive that would encourage you to change, what would that be?
12. Overall, do you consider yourself healthy or unhealthy? On a scale from 1-10, with 1 being unhealthy and 10 being the healthiest, rate yourself.

Figure 3.2

Revised Interview Questions

participate in an extended interview using the revised interview protocol. The hospital granted permission and further permission was obtained from the University of Florida Institutional Review Board (Committee for the Protection of Human Subjects).

These 61 individuals comprised a sample based on the risk criteria. Those who volunteered to be interviewed made up the convenience sample for the study. A 75% interview rate of this sample (46 of 61) was obtained.

Procedure

Each individual was contacted by telephone and reminded of the risk assessment administered by the hospital. The researcher identified herself as a nurse doing follow-up for the hospital. They were asked whether follow-up was obtained for any of the problem areas identified during the assessment, if they needed further information, or had any questions. Once rapport was established, the researcher identified that she was also a doctoral student doing research on health behaviors and that there were other questions she would like to ask, if possible. Verbal consent to be interviewed constituted informed consent. A convenient time for the interview was established if the individual was agreeable. Confidentiality was assured. If the individual had time, the interview was completed immediately.

Permission to tape record the telephone interview was obtained if agreeable and a tape was made for more

accurate recording of responses for later analysis. If no taping was permitted, the interview answers were recorded as completely as possible on the interview data sheet. Respondents were asked to repeat or clarify their answers when the researcher did not obtain the total response. Eight of the 46 individuals interviewed refused taping (one female, seven males).

An interview data sheet was developed from the pilot with each of the revised questions and any themes or answers which emerged as frequent responses. A copy appears as Appendix G. This was used as a guide only. The individual's responses were not forced into any theme or answer category if they did not apply.

Each question was asked and the individual's response recorded on the data sheet. If the individual did not understand the question, it was reworded for more clarity. The researcher had freedom to probe if there was uncertainty that the question was not fully understood, however, every attempt was made not to lead the respondent toward a particular answer. The purpose was not to establish validity and reliability for the interview protocol, but to assist the individual in identifying reasons for making or not making health behavior changes.

Analysis of the Data

When all the interviews were completed, the tapes were replayed and reviewed. Missing information was recorded on the interview data sheets to obtain as

accurate a response as possible. Answers to each question were analyzed. Similar answers were grouped and any emerging themes or concepts were noted. Two disinterested persons were asked to review the answers for any themes they might see emerging. The coding schemes were refined several times until a satisfactory classification system was developed.

Once all questions were coded and classified, each question was analyzed for dominant trends. Frequency tables were used to define the population, demographic data, and responses. Chi-square tests were applied to analyze the significance of observed differences in the frequency of responses for subgroups differing on the demographics of age, sex, race, and education. The study group data were analyzed separately and in combination with the pilot data (combined group). Results are reported in terms of the study group except when a statistically significant finding was evident in the combined group only.

CHAPTER 4

RESULTS

The purpose of this exploratory study was to elicit the factors individuals perceived as influencing them to change, not change, or to maintain their health behaviors after the administration of a health risk assessment. A quantitative analysis of the telephone interview results will be presented along with additional descriptive findings.

Data Analysis

Statistical Analysis

The statistical program used to analyze the data was the Statistical Package for the Social Sciences (SPSS) and the statistical test used was chi-square. Differences were analyzed between the pilot and study groups with regard to the demographic variables of sex, race, educational level, and age range. Data from the study group alone, and the combined pilot and study groups were also analyzed using these demographic variables. The pilot and study groups were statistically different ($p < .05$) with regard to the proportions of males and

females. When the pilot and study groups were combined, however, there were no statistical differences when using these same demographic variables to analyze the data.

Next, response data from each question were analyzed using the demographic variables of sex, race, educational level, and age range for the study group alone and for the combined group. The only statistical difference that appeared was on research question number three. There was a statistical difference between the proportions of men and women answering yes and no on whether their places of employment affected their health behaviors ($p < .05$). Women identified work more frequently as affecting them than men (89% yes vs 61% yes).

The data were difficult to analyze for several reasons. Some individuals gave no response to certain questions, leading to empty data cells. This required combining certain categories for the purpose of statistical analysis. Some individuals gave more than one response to questions making discrete categories impossible and leading to combined categories. However, at other times it was not feasible to combine categories because it would have distorted the meaning of the response data. The descriptive findings, tables, and discussion that follow are based on all responses given to each question. The researcher felt it was important to preserve as many individual responses as possible, and that each factor identified by an individual was important

and reflected uniqueness. All results are discussed in reference to the study group only (and not the pilot and combined groups) unless otherwise indicated.

Content Analysis

During the coding process, the concepts of education, personal self, and environment were used, if possible, along with other concepts from the review of the literature such as health beliefs. Some codes were also combined or collapsed for purposes of computer analysis.

The process of content analysis involved at least three, and sometimes up to five, codings of the responses to each question. Answers to each question were initially categorized and coded by the researcher. The coding scheme was then reviewed by two other individuals for content, consistency, and suggestions. One of these individuals was a nurse educator and one was a disinterested party. After this review, the data were recategorized and/or recoded based on the suggestions.

The data were recoded again by the researcher to establish consistency and to provide the researcher with justification for the codes. A fourth recoding was done if necessary as information was prepared for computer analysis. Some questions required a fifth recoding depending on the number of responses or factors identified by the respondents; some responses were difficult to classify or could be coded as more than one category. These particular questions will be addressed later with

more explanation as to the coding process for those responses.

As each question is discussed, the classifications and codes are reviewed to show how data were categorized. The researcher provides a rationale for the codes when necessary.

An overview of the sample and its characteristics are presented followed by the statistical results for the research questions in Chapter 1. The descriptive results of the interview protocol follow the research questions.

Sample and Questions

A large corporation in the Southeastern United States contracted with a small community hospital for health analysis and risk assessment services for its employees. The corporation of 2400 employees was made up of middle management and below with approximately one third males and two third females. Sixty-one individuals were chosen by the hospital for a follow-up telephone call because of their risk factors. These risks factors included being overweight by 40 pounds or more; having a diastolic blood pressure above 100; a systolic blood pressure above 180; a blood glucose above 150; anemia; blood cholesterol greater than 250; and a cholesterol ratio greater than 10. Eight months later the individuals were contacted by telephone to see if follow-up had been obtained or actions taken. At the same time, those who agreed, were interviewed as to

whether they had made any changes in their behavior, and what self-identified reasons they gave for making or not making any changes.

Sixty-one subjects were identified for inclusion in the final sample. Of these, six individuals could not be contacted due to disconnected numbers, long distance, no answer, having moved, and no response after messages were left for them four times. Four individuals refused to be interviewed when contacted. Of the 51 remaining who agreed to be interviewed (84%), five of these could not be reached at a later time for the interview after at least three calls. This left 46 individuals, or a 75% interview rate. This constitutes a satisfactory sample by previously stated criteria (70%-80%). Of the 46 interviewed, only eight refused taping (seven males and one female). This provided 38 taped and eight verbal interviews.

Characteristics of the Population

Thirty of the 46 individuals were male and 16 were female. Sixty percent of the males had a BS degree or higher, while only 19% of the women had more than two years of college. The sample was largely Caucasian (59%), with 22% Hispanic, and 11% Black. Thirty-eight percent of the women were between 31-40 years of age and 60% of the men were equally divided between 31-40 and 51-60. In general, 33% of the sample fell between 31-40 years of age. The minimum age of the study group was 23 and the

maximum age was 66. The mean age was 42.5. The mode age was 31. Table 4.1 displays the demographics of the study group. Table 4.2 shows the demographic comparison by percentage of the pilot, study, and combined groups.

Statistical Results of Research Questions

The chi-square test was applied to research questions one through six posed in Chapter 1. Both study group and combined group data were analyzed for significant differences. Each of the questions is presented along with the cross-tabulated chi-square results for the study group data unless indicated otherwise.

Research question one

Do males and females differ in the type of reaction to their risk assessment results? There was no statistical difference between males and females in the types of reaction to their risk assessment results for either the study or combined groups. Data for this question were obtained from question number two on the interview protocol: How did you feel after getting the results of the assessment? A range of reactions was evident in the responses to this question as in the pilot. Three major reactions were evident. These included: not what was expected, what was expected, and better than expected. Table 4.3 shows how these reactions were distributed. If an individual gave no answer or more than one answer, they were classified as "expected." This was done to assure discrete categories for chi-square

TABLE 4.1

Demographics of the Study Group

Variable		Group		
		Males N=30	Females N=16	Total N=46
Race	Caucasian	16	11	27
	Black	2	3	5
	Hispanic	9	1	10
	Other	3	1	4
Education	HS or less	4	11	15
	AA/AD	8	2	10
	BS	12	3	15
	MS	5	0	5
	PhD	1	0	1
Age Range	18-30	6	2	8
	31-40	9	6	15
	41-50	4	4	8
	51-60	9	3	12
	61-	2	1	3

analysis. Approximately 22% received results they did not expect. One individual was confused and did not understand the results, one did not remember how he felt, two gave no answers, and five individuals gave two answers (i.e., surprised about one aspect, yet expected most of the other results). This descriptive account provided more than 46 responses. When all the answers were considered in the descriptive analysis, a slightly different picture evolved.

TABLE 4.2

Comparison of the Study, Pilot and Combined Groups

Variable		Group		
		Combined	Study	Pilot
Sex	Males	55.0%	65.2%	21.4%
	Females	45.0%	34.8%	78.6%
Race	White	61.7	58.7	71.4
	Black	8.3	10.9	0.0
	Hispanic	23.3	21.7	28.6
	Other	6.7	8.7	0.0
Age Range	18-30	16.7	17.4	14.3
	31-40	38.3	32.6	57.2
	41-50	18.3	17.4	21.4
	51-60	21.7	26.1	7.1
	61>	5.0	6.5	0.0
Education	HS	26.7	32.7	7.1
	AA/AD	23.3	21.7	28.6
	BS	36.7	32.6	50.0
	>BS	13.3	13.0	14.3

TABLE 4.3

Reaction to Assessment Results by Sex

		Reaction			Total
		>expected	expected	<expected	
Male	count	11	15	4	30
	row pct	36.7	50.0	13.3	
	col pct	64.7	78.9	40.0	
	tot pct	23.9	32.6	8.7	65.2
Female	count	6	4	6	16
	row pct	37.5	25.0	37.5	
	col pct	35.3	21.1	60.0	
	tot pct	13.0	8.7	13.0	34.8
		17	19	10	46
		37.0	41.3	21.7	100

Chi-square = 4.38424 significance = 0.1117

>expected = better than expected
 <expected = not what was expected

The responses were distributed almost evenly among the three categories. More men identified the results as being what they expected than did women. Almost one-third (30.4%) of the sample was not expecting the results received.

Research question two

Is there a significant difference between level of education and how an individual reacts to risk assessment results? There was no significant difference between

level of education and how the individual reacted to his or her risk assessment results for either the study group or the combined group. Combined group data are presented in Table 4.4

TABLE 4.4

Reaction to Assessment Results by Education

Education	Reaction			Total
	>expected	expected	<expected	
HS	count	6	5	5
	row pct	37.5	31.2	31.2
	col pct	26.1	22.7	33.3
	tot pct	10.0	8.3	8.3
AA-AD		7	4	3
		50.0	28.6	21.4
		30.4	18.2	20.0
		11.7	6.7	5.0
BS		9	8	5
		40.9	36.4	22.7
		39.1	36.4	33.3
		15.0	13.3	8.3
>BS		1	5	2
		12.5	62.5	25.0
		4.3	22.7	13.3
		1.7	8.3	3.3
		23	22	15
		38.3	36.7	25.0
				60
				100

Chi-square = 4.13257 significance = 0.6587

>expected = better than expected

<expected = not what was expected

Interview protocol question number three also relates to the way the results of the assessment affected individuals. Did the information you received affect you in any way? How could it have been more helpful to you or how could the results have meant more to you? Seventy-four percent of the individuals felt that the information helped them. Table 4.5 shows the effect of the appraisal on the individual. Eleven of the 46 individuals (24%) felt the appraisal increased their awareness while four (9%) stated that it confirmed what they already suspected. Six individuals (13%) felt reassured and 13 (28%) identified no specific effect.

TABLE 4.5

Effect of Appraisal on the Individual

Effect	Responses
Increased awareness	11
Confirmed thoughts	4
Reassured	6
Served its purpose/info	4
Was clear and helpful	8
No specific effect identified	<u>13</u>
	46

Table 4.6 shows how the information could have been more helpful or meant more to the individual. Three individuals said that information could not have been more helpful and 13 had no comment (35% total). Eleven individuals (24%) stated they would have liked more information on what to do or the "how to" knowledge. Only four individuals mentioned goal-setting. Responses related to symptoms or problems were coded as a susceptibility or severity factor under the Health Belief Model. Only four individuals mentioned this.

Research question three

Do males and females differ in their perceptions of whether their place of employment affects their health behaviors? There was no difference between males and females in the study group in their perception of whether the workplace affected their health behaviors. However, when combined group data were analyzed, there was a significant difference. Sixty-one percent of the men said yes as compared to 89% of the women ($p = 0.0299$). Table 4.7 displays the chi-square data for this research question.

In addition to this finding several other descriptive findings resulted from the analysis of the interview protocol responses. Seventy-three percent of respondents (44 of 60) felt that their employment affected their health behaviors and 47% of these (19) felt it had a negative effect.

TABLE 4.6

How Information Could Have Been More Helpful

Categories and responses	Responses N=46
Education	
Design/Development	(2)
Easier to understand	2
Delivery	(12)
Someone to explain problem areas	7
Mutual goal setting	3
Self-set goals	1
If MD sat down with him	1
Knowledge	(11)
More on what to do	<u>11</u>
	25
Personal Self	
Up to me to do something	<u>1</u>
	1
Health Belief Model	
Susceptibility/Severity	
If symptoms were present	1
If condition was worse or problems identified	<u>3</u>
	4
Couldn't have been more helpful	3
No Comment	13

TABLE 4.7

Effect of the Workplace on Health Behaviors by Sex

		Response		
Sex		Yes	No	Total
Male	count	20	13	33
	row pct	60.6	39.4	
	col pct	45.5	81.2	
	tot pct	33.3	21.7	55.0
Female		24	3	27
		88.9	11.1	
		54.5	18.7	
		40.0	5.0	45.0
		44	16	60
		73.3	26.7	100

Chi-square = 4.71419

significance = 0.0299*

The three most identified negative effects of the job were stress, the sedentary type of work, and the long hours. Stress was identified by 16 of the 44 individuals (36%) with 10 of these being female.

Both men and women identified co-workers as having the most positive effect on them in the workplace. The positive effect was attributed to encouragement and support. Four individuals recognized the fitness center as a potential positive influence but said it had no effect on their own health behavior. Table 4.8 lists the factors in the employment setting which had a positive and negative effect. Table 4.9 shows the type of influence the workplace had on males and females and Table 4.10 shows the numbers of individuals identifying stress in the workplace.

Research question four

Do males and females differ in the type of individuals they identify as helping them make health behavior changes? There was no significant difference in either the study group or combined group between males and females in the type of individuals they identified as helping them make health behavior changes. Table 4.11 displays the chi-square results for this question.

Response data for this question were obtained from interview protocol question number six. Was there a person(s) who had an impact on you to make a change? How? Did anyone serve as a role model for you? At least four

TABLE 4.8

Factors in the Employment Setting Which Affect Health Behavior

Type of Factor	No. Responses
Positive Effects	
Co-workers	9
Availability of fitness center	2
Improved monetary status	1
Offered health screening	1
No smoking office	1
Exposure to health-related individuals	2
	16
Negative Effects	
Increased stress	16
Sedentary job	10
Long hours (more than 8 hrs/day)	5
Continues bad habit at work	2
Co-workers	3
Works two jobs	2
Availability of junk food	1
Night shift affects eating habits	1
	40
(Note: Some individuals identified more than one positive and negative effect.)	

TABLE 4.9

Positive/Negative Employment Effect by Sex

Sex	Type of Effect			
	(+)	(-)	(+) (-)	None
Male	6 18%	12 36%	2 6%	13 39%
Female	10 37%	13 48%	1 4%	3 11%
Both	16 27%	25 42%	3 5%	16 27%

Chi-square = 7.09428 significance = 0.069

TABLE 4.10

Employment Stress Identified by Sex

Sex	Response	
	Yes	No
Male	6 18%	27 82%
Female	10 37%	17 63%
Both	16 27%	44 73%
Chi- square = 1.82163		significance 0.1771

TABLE 4.11

Individual Identified as Helping Health Behavior Change -
Male vs. Female Perceptions

Individual Identified		Group		
		Male	Female	Total
Self alone	count	9	2	11
	row pct	81.8	18.2	
	col pct	30.0	12.5	
	tot pct	19.6	4.3	23.9
sig. other (includes spouse)		5	6	11
		45.5	54.5	
		33.3	23.7	
		10.9	13.0	23.9
peer/friend		5	2	7
		71.4	28.6	
		33.3	11.8	
		10.9	4.3	15.2
self plus others		3	1	4
		75.0	25.0	
		10.0	6.2	
		6.5	2.2	8.7
relative		2	2	4
		50.0	50.0	
		6.7	12.5	
		4.3	4.3	8.7
no one		6	3	9
		66.7	33.3	
		20.0	18.7	
		13.3	6.5	19.6
		30	16	46
		65.2	34.8	100
Chi-square = 6.97289		significance = 0.4317		

out of every five individuals felt that there was a person or persons who had an impact on them to make a change or not make a change. Self was identified most frequently with 15 responses (33%). Spouse or significant other, which were combined for purposes of statistical analysis, were identified 11 times as having an impact (24%). The main way in which these individuals had a positive effect was through support. Table 4.11 shows the individuals identified as helping health behavior change.

More women (54.5%) identified a spouse or significant other as having an impact as opposed to the men (45.5%). Forty percent of the men identified themselves as impacting their health behavior change while 20% identified no one. In contrast 18.7% of the women identified themselves as impacting their health behavior change and 18.7% identified no one. (Themselves includes self alone and self plus others.) Table 4.12 shows how these individuals were felt to have an impact.

Only six individuals identified anyone as a role model for health behavior change. One individual identified his father as a negative role model because of being overweight. Two men jokingly identified Charles Atlas and Jack LaLane. The other three individuals identified were friends or relatives. Two of these were

TABLE 4.12

How Individuals Impacted Health Behavior

Method of Impact	Responses
<hr/>	
Support	15
Death	2
Increasing their awareness	3
Increasing their stress	1
Emphasizing self-image	1
Making them want to be around for family	1

(Note: All individuals did not identify how these other individuals affected them.)

role models for weight loss and the other was significant for being supportive in addition to being a role model.

Research question five

Do males and females differ in the types of events they identify as affecting their health behavior? There was no significant difference between males and females in the type of events they identified as affecting their health behaviors for either the study group or the combined group. Table 4.13 displays the chi-square results for this question. The classifications for the type of events were obtained from a content analysis of the interviewee's responses (see Table 4.14).

Interview protocol question number seven provided additional responses relevant to this research area. Has

TABLE 4.13

Events Identified as Affecting Health Behavior by Sex

Sex	Type of Event					Total
	Tragic	Family	Change	Personal	None	
Male count	12	4	1	3	10	30
row pct.	40.0	13.3	3.3	10.0	33.3	
col pct.	75.0	66.7	20.0	75.0	66.7	
tot pct.	26.1	8.7	2.2	6.5	21.7	65.2
Female	4	2	4	1	5	16
	25.0	12.5	25.0	6.2	31.2	
	25.0	33.3	80.0	25.0	33.3	
	8.7	4.3	8.7	2.2	10.9	34.8
	16	6	5	4	15	46
	34.8	13.0	10.9	8.7	32.6	100

Chi-Square = 5.36986 significance = 0.2514

there been an event or experience in your life that helped you to change your behavior or not change your behavior? Sixty-seven percent (31) of the respondents felt there was an event or experience that affected their health behavior. Sixty-five percent of these (20 of 31) felt the event caused a positive change in behavior. Of the numerous events identified, four major areas evolved. These included tragic events, family or relationship

experiences, change or stress events, and personal or internal experiences. Table 4.14 lists these four major areas and the events or experiences representing them.

Tragic events were the most frequent type of event identified as either helping or hindering change for both males and females. Males however identified 75% of all tragic events mentioned. Eighty percent of the tragic events identified were said to have aided behavior change. Of all the events mentioned as helping behavior change in a positive way, tragic events comprised 61%.

TABLE 4.14

Events Identified as Impacting Health Behavior

Tragic Events
Death
Illness
Family history of medical problems
Self with health-related problems
Accident
Family and Relationship Experiences
Relationship with significant other
Existence of family
Possible future family
Change or Stress Events
Financial stress
Emotional stress (no cause identified)
New job
New residence
Personal or Internal Experiences
Religion
Self-discovery
Aging
Upbringing

Twenty-one percent of all the events identified involved family or relationships and were seen as being helpful more than not. Men identified this type event twice as often as women. Nineteen percent of all the events identified were classified as change or stress events. Women identified more of these change or stress events (63%). Change or stress events were identified as helping at least 50% of the time. Personal or internal experiences were less frequently identified (5%) but were still perceived as helpful.

Table 4.15 shows the four classifications of events in order of frequency for helping and hindering, and Table 4.16 shows the frequency of events identified by sex. Table 4.17 identifies the specific events that individuals felt helped them to change. Table 4.18 identifies the specific events that individuals felt hindered them from making health behavior changes.

Research question six

What are the internal or personal characteristics that individuals identify as helping or hindering their health behavior? This question was answered by examining interview protocol question number nine: What personal feelings or internal things can you identify about yourself that helped you to make the changes? Or hindered you from making changes? Personal or internal things were more difficult for individuals to identify. Even with probing, some individuals could not identify what it was

TABLE 4.15

Frequency of Helping/Hindering Events

Type of Event	Event Effect	
	Helped	Hindered
Tragic	61%	42%
Family/Relationship	19%	25%
Change/Stress	13%	33%
Personal/Internal	7%	0%
	100%	100%

TABLE 4.16

Events Identified by Sex

Event	Group		
	Male	Female	Total
Tragic	63%	44%	56%
Family/Relationship	22%	19%	21%
Change/Stress	11%	31%	18%
Personal/Internal	4%	6%	5%
	100%	100%	100%

TABLE 4.17

Events Helping Change

Events	No. Responses
Tragic	13
Death of family member	6
Family history of problem	3
Self with problem (medical problem) (dyslexia)	3
Death other than family	1
Family/Relationship	3
Existence of family	2
Relationship with significant other	1
Change/Stress	1
Emotional stress (weight loss)	
Personal/Internal	3
Aging	1
Religion	1
Self-discovery	1

TABLE 4.18

Events Hindering Change

Event	No. Responses
Tragic	5
Friends with heart attacks	1
Death of father	1
Accidents	2
Death of Spouse	1
Family/Relationship	4
Relationship with significant other	2
Family life leaves little time for exercise and physical activity	1
Lack of support from significant other	1
Change/Stress	5
Increased financial burdens	1
Emotional stress	2
Change of job or residence	2

about themselves that helped or hindered making health behavior changes, or they were unwilling to do so. This was a limitation identified from the beginning.

There were six categories of personal/internal factors identified which helped individuals make changes. These were 1) pride/self-image, 2) self-determinism, 3) self-efficacy, 4) optimism, 5) positive feeling of health, and 6) aging. Of these factors, pride/self-image was identified most with the majority of these responses coming from men. Men also accounted for more of the concerns about aging. Table 4.19 displays how responses were coded for question number nine along with the number of responses.

There were four categories of personal/internal factors identified which hindered individuals from making changes. These were 1) procrastination and denial, 2) negative attitude, 3) negative self-determinism, and 4) aging. The most frequent factor identified which hindered change was negative self-determinism (lack of will power or commitment) followed by a negative attitude or outlook. Men identified negative self-determinism most frequently and women identified procrastination and denial. At times certain factors were identified in combination with other factors, but not frequently enough to be significant. Procrastination was identified along with attitude and self-determinism, for instance, but only two respondents answered this way for each combination. Table 4.20

TABLE 4.19

Personal/Internal Factors Identified as Helping Health Behavior Change

Category	No. Responses
Pride/Self-image	13
Self-determinism commitment determination willpower	8
Self-efficacy self in control confidence	3
Optimism positive outlook	2
Positive Feelings of Health feels better when eats right	6
Aging	3

TABLE 4.20

Personal/Internal Factors Identified as Hindering Health Behavior Change

Category	No. Responses
Procrastination/Denial don't think about it lazy procrastinates denial	4
Negative Attitude/Outlook doesn't care negative attitude lack of patience tends to worry	7
Negative Self-determinism lack of willpower no commitment	9
Aging	2

displays the coding of the negative or hindering internal factors and the number of responses.

Research question seven

Are there incentives which individuals perceive as helping them make health behavior changes? Interview protocol question number eleven elicited the responses to answer this research question: If you could be offered one incentive that would encourage you to change, what would that be? The incentives that were identified were classified into five categories. These were 1) personal self, 2) environment, 3) Health Belief Model, 4) health value, and 5) nothing. Personal self was identified most. This was not an incentive in itself, but a recognition that it is self-motivation or having to do it on your own that is the biggest factor in change. The 17 individuals who said this, along with those that said nothing could serve as an incentive (3), made a total of 20 respondents who felt that no incentive could be offered to cause them to change. This accounts for 44% of the individuals responding.

Men identified self-motivation and positive health value as their major incentives. Women identified self-motivation and support as their major incentives. The three most frequent responses were 1) self-motivation, 2) health and seeing positive results, and 3) support. All three of these factors that serve as incentives are abstract. Support can be provided but self-motivation and

health are more personal factors. The most frequent category of responses was environment with a variety of responses given (21 responses). Table 4.21 displays the coding of the incentives for question number 11.

Research question eight

How do individuals rate their own health? Responses from interview protocol question number twelve answered this question: Overall do you consider yourself healthy or unhealthy? On a scale of 1-10, with one being unhealthy and 10 being the healthiest, rate yourself. Most of the individuals considered themselves healthy (38 or 82%) with seven (15%) stating that they were borderline, although the scores they gave themselves were between 4 and 5.5. Table 4.22 shows how the individuals rated themselves. One individual did not rate himself saying it was up to his physician to do that. Four was the lowest rating given and 10 was the highest. No men rated themselves a 10. A majority (58%) of the individuals rated themselves between 6 and 8.

Other Descriptive Findings

Several of the interview protocol questions did not correspond directly with the research questions in Chapter 1. The descriptive findings of these questions follow.

Interview protocol question number one

Why did you take the risk appraisal in the first place? When the responses of the study group were analyzed, the reasons for taking the risk appraisal could

TABLE 4.21

Factors Identified as Incentives for Health Behavior Change

Category	Group		
	Male	Female	Total
Personal Self			
self-motivation	10	7	17
Environment			
support	3	7	10
competition	2	0	2
promotion or			
recognition	2	0	2
work related	3	2	5
another child	1	0	1
new wardrobe	0	1	1
Health Belief Model			
threat/pain	2	1	3
Health Value			
health or			
positive results	9	2	11
Nothing	3	0	3
total responses =			55

TABLE 4.22

Health Ratings

Rating Range	Group		
	Males N=29	Females N=16	Both N=45
4 - 5.5	14%	25%	18%
6 - 8.0	62%	50%	58%
8.5 - 10.0	24%	25%	24%
	100%	100%	100%

be grouped into four basic categories: knowledge, evaluation, personal self, and environment. Motivation, which was mentioned in the pilot, was not mentioned by any of the respondents in the study group. The educational sub-category, evaluation, was the major reason for taking the appraisal, followed by environmental reasons. Table 4.23 gives examples of the responses for each of the categories and the response rate.

TABLE 4.23

Reasons for Taking the Appraisal

Category and responses	No. Responses
Education	55
Knowledge	16
Obtain knowledge of risks and how to correct.	
For labs test results	
Evaluation	39
Make sure things okay	
See where they stood	
No check-up in a while	
Check on another problem	
Previous history of problem	
Family history	
No regular MD	
Personal Self	4
Always concerned about health	
Felt it would be beneficial	
Environment	24
Free	
Available, convenient	
Coerced into it by someone	
Everyone else took it	

Interview protocol question number four

Were changes made? Maintained? For how long? After they completed the health risk assessment, employees' results were reviewed by a nurse, summarized, and appropriate written recommendations were made to the employees. Five types of changes were recommended post assessment to help control the risk factors identified. These included dietary changes, weight control, increased exercise, decrease or stop smoking, and decrease stress. One individual admitted to decreased alcohol consumption post assessment even though this was not a recommended change nor did he drink excessively prior to the assessment.

Dietary changes were more frequently made and maintained than any other type of change. This included decreasing salt intake and lowering fat and cholesterol intake. Thirty three of the 46 individuals (72%) made dietary changes with 23 of these (50%) making that change post assessment. All but one individual was maintaining these changes at the time of the interview.

The second most frequent change made post assessment was weight control with 16 individuals (35%) losing weight. Two individuals had lost weight prior to the risk assessment for a total of 18. Of these 18, 15 (83%) maintained their weight loss. One of the prior weight loss individuals regained weight.

The next most frequent change made was in exercise frequency with 15 individuals (33%) beginning some form of regular exercise. Eight had begun exercise programs prior to the assessment for a total of 23 (50%). Of these, 18 (73%) were maintaining these changes at the time of the interview.

Of the five who smoked, two individuals stopped smoking and maintained this change. Both had, however, just quit smoking only weeks prior to the interview. Five individuals had made changes which reduced their stress level as a result of the risk assessment. Table 4.24 presents an overview of each behavior change according to sex. Each behavior change is discussed in regard to total number of changes made and whether these changes were made before or after the risk appraisal was administered. The number of these changes which were maintained or not maintained, and those individuals that made no changes are also presented. The last two lines of each behavioral change profile states how many individuals were recommended to make that particular type of change and then how many of these individuals actually made changes. The number of those individuals who made recommended changes is always less than the number recommended, but different from the total number of individuals who actually made changes.

TABLE 4.24

Behavior Changes Made

Change Category	Group		
	Male N=30	Female N=16	Total N=46
<u>Dietary Changes</u>			
Changes made	22	11	33
post assessment	16	7	23
prior	6	4	10
Changes maintained	21	11	32
Not maintained	1	0	1
No changes made	8	5	13
Changes recommended	7	5	12
Recommended changes made	3	4	7
<u>Weight Control</u>			
Changes made	13	5	18
post assessment	11	5	16
prior	2	0	2
Changes maintained	11	4	15
Not maintained	2	1	3
No changes made	17	11	28
Changes recommended	15	7	22
Recommended changes made	6	3	9
<u>Exercise Changes</u>			
Changes made	14	9	23
post assessment	11	4	15
prior	3	5	8
Changes maintained	11	7	18
Not maintained	3	2	5
No changes made	16	7	23
Changes recommended	12	7	19
Recommended changes made	4	1	5

TABLE 4.24 (Continued)

Change Category	Group		
	Male N=30	Female N=16	Total N=46
<u>Changes in Smoking</u>			
Changes made	1	1	2
post assessment	1	1	2
prior	0	0	0
Changes maintained	1	1	2
Not maintained	0	0	0
Not a smoker	27	14	41
No changes made	2	1	3
Changes recommended	3	2	5
Recommended changes made	1	0	1
<u>Changes in Stress</u>			
Changes made	2	3	5
post assessment	2	3	5
prior	0	0	0
Changes maintained	2	3	5
Not maintained	0	0	0
Changes recommended	2	2	4
Recommended changes made	1	0	1

Interview protocol question number eight

Are there other factors that helped you to change or had an impact on your health behaviors? Numerous factors were identified as having an effect on health behavior in both positive and negative ways. Six categories were identified in the final analysis of data. These included 1) education, 2) personal self, 3) environment, 4) Health Belief Model, 5) health value, and 6) none. Numerous responses were categorized under Health Belief Model. There were several responses which could be coded into more than one category. After several codings, and without trying to rationalize responses into one category or another, the most discrete category was chosen in each case. For instance, poor eating habits is coded as a barrier under the Health Belief Model. It could also be seen as a product of poor health education thus making it an educational factor. Or it might be seen as a product of the environment based on the type of food available to buy.

The presence of subjectivity in the coding process, even though other parties were involved in the coding, is a product of the interview protocol itself. The purpose of the interview was to identify as many factors as possible and not try to make them fit one category or another. This can be seen as a limitation especially when trying to analyze the data statistically and is discussed in Chapter 5.

Thirty-nine of the 46 study respondents (85%) identified other factors which affected their health behavior. These factors could be coded into five basic areas which include: 1) education, 2) personal self, 3) environment, 4) Health Belief Model, and 5) health value. Aspects of the Health Belief Model, specifically susceptibility, severity, benefits, and barriers were identified most by individuals (18 responses or 39%). Environmental factors were identified by 30% of the study group. Table 4.25 presents the coding of categories and the specific responses to question number eight. Each response is preceded by a plus sign (+) or a negative sign (-) to identify whether the individual considered the factor to be a positive or a negative influence on their health behavior.

Interview protocol question number ten

If you accomplished a change, what do you feel helped you the most? If you did not, what hindered you the most? Factors identified as helping or hindering most could be classified into five basic categories. These included 1) education, 2) personal self, 3) environment, 4) Health Belief Model, and 5) health value. As with question number eight, the coding process again contains some subjectivity and thus becomes a limitation. There were also some individuals who could not identify just one factor and the researcher did not force them to decide on only one. One individual actually said that she could not

TABLE 4.25

Additional Responses Categorized as having an Influence on Health Behavior

Category	Response rate
Education	13%
Information/Education	
(+) TV	
(+) Reads a lot	
(+) A lot of information given	
Personal Self	20%
Denial	
(-) Does not feel she looks fat	
(-) Does not feel bad	
(-) Too old to make changes	
Self-image	
(+) Looking at self in the mirror	
(+) Likes to look good	
Responsibility	
(+) Devotion to family	
Environment	30%
(+) Religion	
(-) No MD	
Change/Stress Events	
(-) Unstable environment	
(-) Too many changes in his life	
(-) Stress causing increased eating	
(-) No time	
(-) Decreased finances	
(-) Stress/work after husband's death	
Verbal/External Influences	
(+) Hearing what is said about others	
(+) More people concerned about health	
(-) Need outside motivation	
(+) His profession influences him	

TABLE 4.25 (Continued)

Category	Response rate
Health Belief Model	39%
(Susceptibility/Severity)	
Physical Changes/Medical Problems	
(+) Aging	
(+) Pregnancy	
(-) Birth control pills	
(+) Previous health problems	
(+) Test results	
Health Risk	
(+) Family history of problems	
(+) Health risk if he does not change	
(+) Fear of disability	
(Barriers)	
Negative habits	
(-) Lazy	
(-) Poor upbringing	
(-) Poor eating habits	
(-) Priorities wrong	
(-) Boredom	
(-) Negative lifestyle	
(Benefits)	
Healthy feelings	
(+) Feels better with exercise	
(+) Increased energy when eating right	
Health Value	17%
(+) Health conscious	
(+) Always ate healthy	
(+) Eats right	
(+) Always been athletic	
(+) Positive upbringing	
(+)= perceived as a positive effect (-)= perceived as a negative effect	

identify just one factor and that it was really a combination of factors.

The factor which was identified most by individuals as helping promote change was environment, with tragic events comprising the largest part of these factors. The next most identified factor considered to help their efforts to change was coded as Health Belief Model. Enabling factors or susceptibility factors were aspects of the Health Belief Model mentioned most. The factor which hindered most was personal self. Table 4.26 displays the coding of factors that helped most while Table 4.27 displays those factors hindering health behavior change most.

TABLE 4.26

Factors Which Helped Health Behavior Change Most

Category	No. Responses
Education	6
having a goal	
positive priorities	
getting information	
Personal Self	10
sense of responsibility	
willpower (self-determinism)	
only one in control (self-efficacy)	
Environment	13
death of family member	
death of other	
family history	
encouragement by others	
relationship with significant other	
quit job	
Health Belief Model	12
(Enabling factors)	
enjoying healthy foods	
doesn't like sweets	
changed eating habits	
upbringing	
(Susceptibility)	
problem with self	
fear of gaining weight	
knowing what can happen	
Health Value	7
wants to live longer	
feeling better	
seeing positive results	

TABLE 4.27

Factors Which Hindered Health Behavior Change Most

Category	No. Responses
Education	1
having no priorities	
Personal Self	11
lazy	
no willpower	
no time because of family commitment	
Environment	4
relationship with significant other	
stress	
Health Belief Model	7
(Barriers)	
likes sweets	
lack of activity	
exercise boring	
Health Value	1
feeling better in spite of no changes	

CHAPTER 5

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Chapter 5 contains a summary of the research findings, discussed in relation to previous research when possible. Numerous implications for educators are presented. Recommendations for further research are made from which hypotheses can be generated.

Summary

Health risk appraisal (HRA) has been identified in the past as an important step toward health behavior change. The literature pointed to the need for basic exploratory studies of the actions and events that unfold after the HRA. Various factors have been investigated to determine what characteristics affect health behavior change (locus of control, knowledge, media, support, etc.). Self-perceived factors influencing health behavior change have not been a subject of study. This was an exploratory investigation of the self-identified reasons for health behavior change after a health risk assessment. Each individual was viewed as unique and influenced by

many dynamic factors in their attempts to make health behavior changes.

Forty-six individuals from a large corporation were interviewed by telephone eight months after a risk assessment was administered. An interview protocol developed by the researcher was used to help the individuals identify their own reasons for making or not making health behavior changes. Three major concepts, education, personal self, and environment were used as a basis for the interview questions. The following is a summary of the basic findings.

Findings Summarized

1. There were no significant differences between males and females with regard to reactions to their assessment results, to the individuals they identified as helping them make health behavior changes, or to the types of events they identified as affecting their health behaviors.
2. There was no significant difference between educational level and how individuals reacted to their risk assessment results.
3. Seventy-three percent of respondents felt their place of employment had an effect on their health behavior (using the combined pilot and study group). There was a significant difference between the responses of men and women, with 89% of the women responding yes versus 61% of the men ($p < .05$). Of the 44 identifying a workplace

effect, 47% felt it had a negative effect. The three most negative effects identified were stress, sedentary job, and long hours. The most frequently identified positive effect was support and encouragement by co-workers.

4. Approximately 30% of the individuals were not expecting the results they received from the assessment.

5. Seventy-four percent of the respondents felt the assessment information helped them. Overall, the information increased their awareness, and confirmed or reassured their own feelings. Twenty-three individuals (50%) wanted further explanation, or more "how to" information.

6. Eighty percent of the individuals identified someone as having an impact on their health behavior. One third identified themselves. Forty-eight percent identified themselves or themselves plus others as affecting their health behaviors. Men more frequently identified themselves, a spouse or significant other, or no one. Women identified a significant other or spouse, or a relative most frequently. For both men and women, support was the important method of impact. Only six individuals identified any role model.

7. Sixty-seven percent of the respondents felt there was an event that affected their health behavior with 65% of these stating it had a positive effect. Tragic events were identified most frequently by both men and women and had an overall positive effect. Women identified more

stress/change events than men. Tragic events were seen as the most helping type of event. Hindering events were evenly distributed among tragic, change/stress, and family/relationship events.

8. The personal/internal characteristics identified by respondents which helped health behavior change in decreasing order of frequency were 1) pride and self-image, 2) self-determinism, 3) positive feelings of health, 4) aging, 5) self-efficacy, and 6) optimism. Those factors with negative effects on health behavior in descending order were 1) negative self-determinism, 2) negative attitude or outlook, 3) procrastination/denial, and 4) aging.

9. Forty-four percent of the respondents felt that nothing but themselves and self-motivation could help them change. This was true for both men and women. Important incentives included health and seeing positive results for men and support for women.

10. Eighty-three percent of the respondents rated themselves healthy and 15% rated themselves borderline. Scores ranged from four to ten on a ten point scale. Fifty-eight percent rated themselves between a six and an eight.

11. Most individuals took the health risk assessment for purposes of evaluation of their health status. Twenty-four of the 46 (52%) also took the assessment for reasons classified as environmental: it was free, available,

convenient, they were coerced into it, or everyone else took it.

12. The most frequent changes made post assessment were 1) dietary, 2) weight control, and 3) exercise, in that order. When looking at overall changes made (pre and post assessment), diet and exercise were most frequent. More individuals from the sample made changes in regard to diet and exercise than were recommended. However, those who were recommended to make changes in these two areas did not always make these changes. Smoking habits were changed by two of the five individuals who smoked. Five individuals made changes in how they handled stress.

13. Eighty-five percent of the respondents identified other factors affecting their health behavior. Aspects of the Health Belief Model comprised most of these (39%) with susceptibility/severity factors, barriers, and benefits evidenced. Environmental factors were identified next.

14. Factors most frequently seen as helping health behavior change were divided almost equally among the classifications of environmental, Health Belief Model, and personal self. Personal self factors were seen to hinder individuals most.

Discussion of Findings

Before discussing the findings in relation to previous research, it is necessary to reiterate the limitations under which these findings must be viewed.

Limitations:

1. Since the subjects were volunteers from a large corporation of 2400 employees in the Southeastern United States with its own unique structure and personnel make-up, the results must be generalized with caution to other corporations or samples.
2. The use of a volunteer, stratified sample (risk factors identified) limits generalization to other groups.
3. The self-report aspect of the interview itself is a limitation.
4. The interview protocol was not tested for validity and reliability. The subjectivity of the coding process may have affected the interpretation of the results.
5. Statistically speaking, the data were difficult to evaluate at times due to non-response or to multiple responses. This limitation became evident during the statistical analysis. This was compounded by even smaller sample sizes when individuals did not respond to particular questions.

Most of the individuals studied took the risk assessment for evaluation purposes, yet at least 30.4% of these received results that they did not expect. These individuals were interested in health evaluation, yet a large proportion of them did not appear to be able to evaluate their own health. This can be a product of several things such as the individual's concept of health, the emphasis placed on health promotion and risk factors

in our society as we grow up, and the vast amount of conflicting information individuals must process as they try to evaluate their own health. Only two individuals stated they were scared when they got their results; this finding does not support research that claims HRAs may have a negative effect because of fear arousal. The fact that there was no significant difference between men and women, and educational level on how they reacted to their assessment results indicates to the researcher that inability to evaluate one's health adequately is a more general problem.

Fifty-two percent took the risk assessment because it was free, available, and convenient. This indicates to the researcher that ready availability serves as an incentive to people to take an interest in their health whether or not they can effectively evaluate it.

The risk assessment increased awareness of health risk which supports the research by Moody and Rienzo (1981) and Beery, Schoenbach, and Wagner (1986). When individuals were asked how the results of the assessment could have been more helpful, most individuals identified additional "how to" information and more explanation as major items. This reinforces research by Grimm (1983) who found that behavior change is aided most by specific recommendations to the individual. Other research also found this to be true (Coulton, 1986; Zentgraf, 1986; Zimmerman et al., 1986).

Haynes, Taylor, and Sackett (1979) had previously identified the importance of increased communication for compliance in health behaviors. They also stressed the importance of knowing the "critical time" to introduce this communication. Perhaps the respondents themselves are identifying a critical time for this increased communication, that is, at the time when the results are discussed shortly after the risk assessment is administered.

Only four individuals mentioned that goal-setting would have helped them. This does not support the research by Alexy (1985) on goal-setting and health behavior change.

Seventy-three percent felt that their place of employment had an effect on their health behavior. Women felt this more often than men ($p < .05$). This was based on the combined group (33 men, 27 women) with 89% or 24 of the women answering yes compared to 61% of the men. The positive and negative effects, however, seemed to be evenly distributed for women (13 negative effects and 11 positive effects). Job stress was identified as a frequent negative effect by both men and women. Co-workers were seen as a positive effect due to encouragement and support. These outcomes suggest that women, more so than men, may see the workplace as an extension or integral part of their life rather than only a place to work and make money.

The research on whether health promotion in the workplace is cost-effective is inconclusive; however, increased productivity, increased morale, increased perception of quality of life and better health, and overall benefit to the company have been documented (Edington, 1987). Perhaps basic health promotion efforts made by industries are even more important than elaborate health promotion programs. Efforts such as encouraging and even enforcing work breaks to help decrease stress, having mandatory vacation policies, and offering flexible work hours when possible seem to be feasible and desirable. Encouraging some social activities and supporting social contacts also seem to be important since individuals viewed co-workers as a positive factor in the work place.

The positive effects of social support are evidenced not only in the workplace when reviewing the results of this research, but also when looking at individuals having an impact on health behavior. Approximately one-half (48%) of the respondents identified others who affected their health behavior and the main way was through support. This is consistent with research by many authors (Coulton, 1978; Dracup & Meleis, 1982; Gottlieb & Green, 1984). Women identified support more frequently than men. Women also identified support as an incentive for health behavior change. Tilden (1986) verified that support affects the health of women more than men. Role models

did not appear to be important to the individuals in this study based on their responses.

Tragic events were identified frequently as having an effect on health behavior and were seen to have a positive effect more than the other factors. Of all types of events, tragic ones seem to affect individuals most, perhaps because individuals have difficulty dealing with their own vulnerability. When their own lives are threatened or are perceived as threatened, individuals tend to take action. Even though decreasing risk factors are still not automatically associated with decreased death, or change in health, changes in health or death of those close to an individual do seem to have quite an impact on health behaviors as reported by individuals in this study. Even though there was no significant difference between men and women with regard to type of event identified, men did identify tragic events more than women. Perhaps with a larger sample size, this would be a significant finding.

Change and stress events were also frequently identified as hindering events for health behavior change especially for women. Several inferences are possible from this information. Women may deal less effectively with stress; they may not have been exposed to workplace stress until recent years and hence may be less able to handle it; or they may just be more honest about admitting that they are affected by stress than men.

Pride and self-image were identified as the internal factors which helped individuals most with health behavior change. T. George Harris, the editor-in-chief of American Health was quoted by Rippe (1987) as saying, "Vanity has driven more people to good health than fear" (p. 34). The issue of self-image was an important factor identified by the people in this study. Perhaps we tend to take for granted the aspect of self-image and how it affects our general health and well-being.

Positive feelings of health and self-efficacy were identified by individuals in this study as helping behavior change. Rippe (1987) discussed the issue of control in his article on motivating people to exercise. He theorized that people who have control of their lives tend to be much happier and that feeling fit, healthy, and attractive makes people feel in control. Control over one's life was specifically mentioned by several people as helping change. Optimism, self-determinism, and self-efficacy, all identified by individuals have been reported previously as important factors in health behavior change (Cox, 1985; Davis, 1984; Kirscht, 1983; Scheier & Carver, 1985).

Aging was identified as both positive and negative with regard to internal characteristics. It is obviously how the person views aging that is important. Perhaps those individuals who looked at aging as a challenge, or did not like what aging was doing to their self-image,

tended to use this as a tool to help them make changes. Those who viewed aging as an inevitable change about which they could do nothing may have seen this as a deterrent to health behaviors. Men identified aging and self-image more frequently than women.

Forty-four percent of individuals felt that there was no incentive they could be given to encourage them to change. However, one-half of the individuals did identify an incentive. For the most part, however, these incentives were intangible or abstract things such as recognition, health, or support. Perhaps praise, recognition, support, positive health feelings, and encouragement to be self-motivated are much stronger incentives in health behavior change than realized, at least more so than tangible things.

Individuals did not consider themselves unhealthy even if they had previous medical problems, were grossly overweight, had elevated blood pressure, or possessed other risk factors. Even borderline self-ratings were no lower than four on a ten-point scale. This is consistent with Laffrey's (1986) findings. Laffrey felt that if individuals did not feel being overweight was a risk factor and was not unhealthy, then other ways to deal with health promotion need to be identified in helping people change rather than looking at risk factors. Again it is important to look at what people consider unhealthy. Is it the presence of symptoms, a disease, inability to

continue aspects of daily life, or some other thing that robs one of health?

More individuals made changes with regard to diet, weight, and exercise than were recommended by the health care provider at the end of the health risk assessment. This indicates to the researcher that the individuals themselves tended to be more critical of themselves than the health care providers making recommendations. This seems to contradict the finding that one-third of the individuals received unexpected results from the risk assessment. Perhaps this validates Laffrey's research (1986) on how individuals saw themselves as overweight, but not as unhealthy. Respondents saw a need for themselves to lose weight, exercise, or change their diets, but did not correlate this with their overall health status and assumed they were healthier than they actually were. This is also supported by question number twelve in which all respondents felt they were healthy or borderline rather than unhealthy.

Numerous factors were identified as having an effect on health behaviors including religion, media, health values, self-image, risks, and habits. Aspects of the Health Belief Model were apparent in the responses. The aspect benefits was not mentioned more frequently than susceptibility factors with regard to health promotion as proposed in the review of the literature on health promotion by the researcher. This question was rather

global and no particular trends seemed apparent. This result reinforces the feeling that it is important to identify each individual's own motivating factors.

It was difficult for individuals to identify only one factor that helped or hindered them most. Environmental factors were identified more frequently as helping, with tragic and support factors identified most. Personal factors hindered most. The responses however were varied with no significant differences. Again, the researcher feels this indicates it is important to look at the individuals and what they identify as important for themselves at any one given time.

Implications

Implications for Educators

This study has attempted to provide health educators, and educators in general, with a better understanding of health self-improvement motives in order to improve health instruction. By identifying an individual's motivators early, time can be saved in health-related encounters and the intervention can be tailored to the individual. The wide variability of reasons individuals identified as helping or hindering health behavior change was quite obvious in this study. Although some individuals recognized educational differences (wanting more on "how to" make changes for instance), the more important reasons seemed to be related to personal or environmental factors.

The following implications are identified for educators.

1. In this study, a large proportion of individuals received results from the health risk assessment that they did not expect. At least one-third of the individuals evaluated their own health inaccurately (see results for research question number one). There is a trend toward a more health conscious society and the desire for individuals to evaluate their health status. Educators need to teach people how to evaluate themselves with respect to their health and this needs to start in the primary grades, if not sooner. Perhaps the whole issue of self-evaluation needs to be introduced at an early age to encourage and promote an honest yet critical analysis of self.

2. Health educators need to take advantage of the educational opportunity available when the risk assessment is administered. This may be a "critical time" to provide not only results, but also information, the "how to's", and answers to any questions the individual may have. A personal follow-up interview either face to face or via telephone is needed early (within two months) to keep the individual on track and to make follow-up recommendations.

3. Many of the risk factors identified in the study may be a result of stress as well as causes of stress (i.e., overeating, elevated blood pressure). If individuals can identify their own stressors and personal symptoms, they will be more likely to take action.

4. If tragic events are identified as affecting health behavior in a positive way, they need to be discussed during health education encounters. This will facilitate the events being used in a productive way. Perhaps looking at family history more closely is also needed with an emphasis placed on "how to" avoid becoming part of that history.

5. Pride and positive self-image need to be emphasized in early childhood. Programs to build pride and improve self-image should be fostered, because these characteristics were important in the health behavior change process.

6. More recommendations for change need to be made during the health encounter. Perhaps encouraging a self-evaluation with verification and clarification by the health educator would be even better to help the person with self-evaluation. It seemed that the HRA process prompted many people to initiate changes; possibly with increased recommendations, even more changes would be fostered.

7. Health educators need to recognize the individual nature of reasons for making health behavior changes. Clark (1983) stated that it was more productive to look at the learner than the method of instruction. Brownell (1987) felt that searching for the one best approach to facilitate health behavior change would be less fruitful than trying to match the individual to the approach. Educators need to take note of this and individualize

health promotion education along with tailoring health behavior change programs.

8. People do tend to realize they are hindering themselves from making or maintaining health behavior changes. Why this occurs needs to be identified so that individuals can be helped to develop those personal skills needed to overcome the hindering factors or habits.

9. Change and stress were identified by individuals as factors which hindered health behavior change. Change theory is taught in education courses, but only those in education are exposed to this. Educators in the elementary and secondary grades especially need to emphasize the significance of change as a normal, expected process in today's society. Learning to deal with change in a productive way is an important task for all individuals, and ways to practice this can be implemented in the schools.

Implications for Nurses as Educators

1. Aging was identified as both a positive and a negative factor affecting health behavior change. Nurses as health educators need to teach their clients about the process of aging and how to deal with the problems which may arise during that process. Aging should be emphasized as a challenge which does not have to affect one's total self-image in a negative way.

2. Nurses need to encourage clients to evaluate their own health status on a regular basis. They should offer

suggestions, validation, or constructive criticism as needed and as appropriate to the situation. A hypothesis related to this area would be--individuals who are able to evaluate their own health more accurately with regard to risk assessment results are more likely to make positive health behavior changes than individuals who receive results they do not expect.

3. Nurses can play an important role in the risk assessment/health appraisal process. Three areas which can be improved by nursing intervention are providing information, follow-up, and feedback. Nurses can provide more "how-to" information for clients. They can plan for a follow-up session with the client within six weeks to two months after the assessment. At this time any problems can be discussed and questions answered, and at the same time praise and support can be offered. Feedback should not only be given, but also asked for in order to improve any subsequent encounters.

4. Teaching the difference between more healthy, less healthy, and unhealthy, is an area where nursing can excel. Individuals tend to look only at healthy and unhealthy. Perhaps if nursing could emphasize the spectrum of health with many variations in between, individuals would be more likely to want to make changes and less likely to be surprised at health risk assessment results.

5. Nurses are in a perfect position to use tragic events as a factor which might help an individual change a negative health behavior. Nurses cannot only offer support to an individual during a crisis, but follow that individual during their process of coping to identify a "critical time" for learning and acceptance.

6. Control over life situations has been shown to improve one's health and outlook. Nurses can teach clients about self-management and offer them ways to gain control over health-related problems.

7. Support and positive feelings of health were identified as possible incentives by the subjects in this study. Nurses can offer recognition and support as well as indicate positive health factors to clients. This may help to improve motivation for some clients.

Recommendations

One of the purposes of an exploratory study, identified prior to this research effort, was to generate hypotheses for future research. Many recommendations for further study can be drawn from the implications for educators. In addition to those, several recommendations can be drawn from the findings and discussion. These include:

1. Further refinement of the interview protocol with the following suggestions in mind:

a) Add demographics of married vs single and change the age ranges to coincide with the actuary tables. This will facilitate closer correlation with risk factor data already collected.

b) Make question number eight a multiple choice to identify the four or five most important factors to that individual in rank order. Allow the respondents to add factors if needed. Then follow with a question regarding the factor that helped or hindered most by asking them to identify of those five, the one that helped most (hindered most).

c) Add a question on defining unhealthy.

d) Add methods to assure responses. If no answer is given, the researcher could follow with a specific question. This will facilitate statistical analysis.

e) Refine the question on how the information received from the health risk assessment could have been more helpful to elicit more specifics on how that individual acquires and/or processes information (ie, personal discussion, visuals, reading).

2. Use the interview protocol on a larger sample to collect more data for trend analysis. Use it also on a sample showing low or no-risk on HRA.

3. Use the interview at the beginning of health education encounters to see if the information collected can actually be used to help behavior change. Use it in a clinic setting with a control group.

4. Study the actual effects of tragic events on behavior change. More men identified themselves as being affected by this, but what characteristics do these individuals possess? Do they feel they are in control of their lives, or more externally controlled? Do men use these tragic events more productively than women to make health behavior changes in their lives? The following hypotheses can be generated: Men respond more positively with regard to their own health after experiencing a tragic event.

Individuals who make positive health behavior changes after a tragic event are classified as internal locus of control individuals.

5. Study the effect of recommendations with and without goal-setting to see if this has any effect on behavior change. Individuals in this study made more changes than those that were recommended to them. Perhaps determining an individual's own goals at the time of the health assessment and building the recommendations around this would be more fruitful. The following hypothesis can be generated: Individuals who are given recommendations for health behavior change based on self-identified goals will be more successful in making those health behavior changes than individuals who are not given recommendations based on self-identified goals.

6. Use the interview earlier as follow-up after the risk assessment (One to two months post assessment).

7. Look at the health assessment results of employees from similar corporations that have health promotion programs. Compare these results to results from companies that do not have health promotion programs for differences. Also compare the results to companies that do not have health promotion programs, but who foster basic health-promoting activities, to see what differences exist. Perhaps there are none, and with some simple, low-cost additions, companies can improve the health of their employees.

8. Compare companies that have stress reduction programs with those that do not to determine if differences exist with regard to the health of the employees, how they feel their place of employment affects their health, and whether women still view a greater effect than men. Perhaps companies who have stress reduction programs have less sick days used. An hypothesis which can be developed would be; there is no difference between the sick days used between companies who have stress reduction programs and those that do not.

9. Companies need to look at how the corporate climate affects their employees with regard to stress and productivity.

10. Corporations also need to take a serious look at using some form of health risk assessment, whether through a hospital or a more formal HRA. Insurance companies are becoming more serious about risk reduction and savings for

healthy behaviors. Companies would be wise to encourage health in anticipation of insurance changes and for overall corporate wellness. This would include beginning to offer similar health-promoting benefits to families of employees.

11. Women identified the workplace as having more of an impact on themselves with regard to health than men did. This finding should be investigated further not only for the future health of women in the workplace, but also for the implications which may become apparent for management. How much of a link does social support and the work place play for women and is this a positive factor for them, perhaps easing some of the stress which would otherwise be more apparent? The following hypothesis can be generated: Women who identify support mechanisms in the workplace also identify less stress related to the workplace.

12. In this study, recommendations for health behavior changes were not consistently implemented by those who actually needed to make changes, and many of those who did not have changes recommended made changes on their own. Is there something about the way that recommendations are presented to individuals who need to make changes, that deters them from taking that first step to change? Perhaps some other factor related to self-image or self-efficacy can be found between these two groups of individuals.

APPENDIX A

HOSPITAL RISK ASSESSMENT



HEALTH SCREENING

PARTICIPATION INSTRUCTIONS:

Fill in numbered items (1-12). Put only one number or letter per box. DO NOT fill in area below heavy black line.

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Date	Social Security Number
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Evening Phone	11. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	Physician

TEST RESULTS

DO NOT COMPLETE BELOW THIS LINE

Height	Ft. <input type="text"/> in. <input type="text"/>		Weight <input type="text"/> <input type="text"/> lbs.	Frame: <input type="text"/> sm. <input type="text"/> med. <input type="text"/> lg.	Normal Wt. Range <input type="text"/> to <input type="text"/>
Blood Pressure	$\leq 140/90$ (140/90-160/95 border line)		<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/>	Recheck Results <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/>	
Vision	Does participant wear glasses/contacts? Yes <input type="text"/> No <input type="text"/>		Tested with glasses/contacts? Yes <input type="text"/> No <input type="text"/>		
	20/20 or 20/30 Far: R = 20 <input type="text"/> L = 20 <input type="text"/>		Near: R = 20 <input type="text"/> L = 20 <input type="text"/>		
Anemia (Hematocrit)	Male $\geq 40\%$ Female $\geq 37\%$ <input type="text"/> Normal <input type="text"/> Recheck <input type="text"/> %		Further Evaluation Needed Yes <input type="text"/> No <input type="text"/>		
Glaucoma	≤ 22 mm Hg Circle One: Contact/NCT <input type="text"/> R <input type="text"/> <input type="text"/> L <input type="text"/> <input type="text"/>		Blood Test Yes <input type="text"/> No <input type="text"/> Basic <input type="text"/> Cardiac <input type="text"/>		

SUMMARY

LIFESTYLE CHANGES

COUNSELOR



ANCILLARY TEST RESULTS
 These tests available only at some locations

NAME _____ SS# _____ AGE _____ HT. _____

Does participant wear a hearing aid? ☐ yes ☐ no If YES, do not test

HEARING

LOWEST RESPONSE LEVEL	FREQUENCY (Hz)				Left Ear X	Right Ear O
	500	1000	2000	4000		
25 db Normal					Remarks _____ _____ _____ _____	
40 db Mild loss						
60 db Moderate loss						
					<input type="checkbox"/> Further Evaluation Recommended	
					<input type="checkbox"/> Further Evaluation Recommended	

ORAL SCREENING

FOOT SCREENING

SPIROMETRY

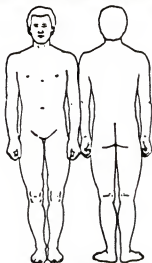
Predicted Actual % Pred.

Forced Vital Capacity _____

Forced Expired Vol/Sec _____

SKIN: Indicate lesion locations

SUN DAMAGE: Mild/Moderate/Severe



☐ Further Evaluation Recommended

2 Body Fat _____

Young Men 1. Abdomen _____	Young Men 1. Right upper arm _____
(age 17-30) 2. Right thigh _____	(age 17-30) 2. Abdomen _____
3. Right forearm _____	3. Right forearm _____
Older Men 1. Abdomen _____	Older Men 1. Deltoids _____
(age 30 & above) 2. Right thigh _____	(age 30 & above) 2. Abdomen _____
3. Right calf _____	3. Right forearm _____

FEMALE - 8 BODY FAT

	30	30-39	40-49	50-59	60+
Excellent	5.0-9.9	9.9-14.9	14.9-19.9	19.9-24.9	24.9-29.9
Good	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9
Fair	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9
Poor	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9
Very Poor	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9

MALE - 8 BODY FAT

	30	30-39	40-49	50-59	60+
Excellent	5.0-9.9	9.9-14.9	14.9-19.9	19.9-24.9	24.9-29.9
Good	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9
Fair	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9
Poor	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9
Very Poor	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9

HEALTH HISTORY

PARTICIPANT INSTRUCTIONS: Each question must be answered Yes or No. DO NOT skip any questions. This is confidential material.

1. Have you ever been treated for:

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Anemia
<input type="checkbox"/>	<input type="checkbox"/>	Cancer
<input type="checkbox"/>	<input type="checkbox"/>	Diabetes
<input type="checkbox"/>	<input type="checkbox"/>	Fibrocystic Disease
<input type="checkbox"/>	<input type="checkbox"/>	High Blood Pressure
<input type="checkbox"/>	<input type="checkbox"/>	Intestinal Problems
<input type="checkbox"/>	<input type="checkbox"/>	Other _____
 2. Have any of your blood relatives ever had:

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Diabetes
<input type="checkbox"/>	<input type="checkbox"/>	Heart Attack
<input type="checkbox"/>	<input type="checkbox"/>	High Cholesterol
<input type="checkbox"/>	<input type="checkbox"/>	High Blood Pressure
<input type="checkbox"/>	<input type="checkbox"/>	Cancer
<input type="checkbox"/>	<input type="checkbox"/>	Glaucoma
- Yes No
3. Do you exercise on a regular basis? ☐ ☐
How often? _____ x a week.
 4. For how long do you exercise?
_____ min _____ hours
 5. In what type of exercise do you participate?

 6. Have you ever felt the need to cut down on drinking alcoholic beverages? ☐ ☐
 7. Do you have shortness of breath, pain, or discomfort in the chest after exercise? ☐ ☐
 8. Do you smoke cigarettes? _____ Pipes? _____ Cigars? _____
If YES how many packs per day? _____ How many years? _____
 9. Have you ever taken a morning eye-opener? ☐ ☐
 10. Are you under stress much of the time at home? ☐ ☐
 11. Are you under stress much of the time at work? ☐ ☐
 12. Have you ever felt annoyed by criticism of drinking alcoholic beverages? ☐ ☐
 13. Are you satisfied with your current lifestyle/habits? ☐ ☐
 14. Have you made a change in your lifestyle in the last year to improve your health? ☐ ☐
What change? _____
 15. Have you ever had guilt feelings about drinking alcoholic beverages? ☐ ☐
 16. Do you have a personal doctor or regular source of medical care? ☐ ☐



CONSENT AND RELEASE STATEMENT

The undersigned hereby requests that screening examinations/tests be performed for me by the Doctors' Hospital in Coral Gables. I understand that all examinations/tests will be performed without any charge to me whatsoever, except for the optional blood test to be performed by Doctors' Hospital Clinical Laboratories, for which a nominal fee to cover expenses will be requested. (This includes administrative expenses).

I hereby release Doctors' Hospital in Coral Gables from any and all liability, including any matter or thing committed or omitted which may arise during blood drawing or after examinations/tests or from the data derived therefrom.

It is understood that:

1. The data derived from such examinations/tests is to be considered as preliminary only and in no way conclusive;
2. the results of my examination/tests will be sent to me, the participant.
3. the responsibility for initiating any follow-up examinations for abnormalities identified at the Screening lies with me as the person responsible for my own health and not with any participating organizations;
4. health volunteers will have access to my test results for the sole purpose of ascertaining if the results are abnormal and aiding me in initiating a follow-up exam, and;
5. no other individual or agency will have access to my individual test results without my expressed written permission. Aggregate data may be used for report and research purposes.

I have read and understood the above paragraphs.

Signature - Participant

Date

Signature - Witness

Date

APPENDIX B

PILOT INTERVIEW PROTOCOL

Date Interviewed:	ID Number:
Male/Female	Occupation:
Education:	Racial/Ethnic Group:
Age: 18-30 31-40 41-50 51-60 61 or older	

Risk Appraisal Taken:

Date Taken:

With or Without Formal Program:

Type Program:

Date Completed:

1. Why did you take the risk appraisal in the first place?
2. What do you see as the purpose of risk appraisal?
3. How did you feel after getting the results of the HRA?
4. How were the results of the HRA made available to you?
5. Was getting the results this way of benefit to you?
6. Do you understand your results? Agree with them?
7. Would you be willing to share the results of your risk appraisal with me?
8. Changes made- yes/no

What?

Maintained?

For how long?

9. Was there a person or persons that influenced you to make or not make the change?

spouse

significant other

peer

relative

self

self at risk

To maintain a change?

10. Has your place of employment influenced your health behaviors? If so, how?
11. Has there been an event or experience that helped you to change or not change your behavior? If so, what? An event that helped you to maintain a change?

12. Do you feel money (or lack of money) had any effect on whether you did or did not make a change? Maintain change?
13. Were there things that were available or not available to you that you feel helped you to change or hindered you from changing? Helped to maintain a change?
14. Are there other factors that helped you make a change or maintain a change? That hindered you from making or maintaining a change?
15. What are the personal characteristics or feelings about yourself which helped or hindered you from making a change? Maintaining that change?

APPENDIX C
LETTER TO PILOT VOLUNTEERS

10 March 1987

I am a registered nurse enrolled in a doctoral program in education at the University of Florida, Gainesville. For my dissertation I am seeking volunteers who have taken Health Risk Appraisals. I am interested in looking at health behaviors and their relationship to the risk appraisal process. I do not need to see the actual results of your risk appraisal. I would like to ask you some questions which will take approximately fifteen minutes of your time.

Your participation in the study will be both anonymous and voluntary. By returning the enclosed postcard or calling me, you agree to participate in the survey. Write your name and number with convenient times I may call you on the back of the postcard or you may call me and leave a message on my phone recorder at home (279-5313).

Thank you in advance for your consideration. I would greatly appreciate your participation in this survey. I will be glad to share my results with you.

Sincerely,

Mary Smolenski, MS, ARNP
Family Nurse Practitioner

APPENDIX D
INNER VIEW HRA ABSTRACT

Inner View is an eleven page health assessment tool originally developed by Medical Datamation fifteen years ago and now produced by National Computer Systems. Pages three through ten provide the actual assessment questions while page one discusses the issue of confidentiality and page eleven gives a history of the tool. Page two is the identification data for correlation of the data and return of the information directly to the individual.

The assessment questions are separated into four major sections involving Habits and Lifestyle, Self-Care and Tests, Personal Health Conditions, and Symptoms. The Habits and Lifestyle section is also divided into areas concerned with eating habits, exercise, smoking, stress and feelings, ETOH, drugs, and accidents and hazards. The questions require a yes or no, or frequency rate answer. Under the eating habits, frequencies of various foods are investigated on a daily and weekly basis.

Self-care and tests involve the presence or absence of self-care practices and tests to detect problems such as blood pressure and cholesterol. Personal health care questions relate to history of medical or health related problems, family medical history, and a self-rating of general health. Again, these are yes or no and multiple choice. The symptoms section reviews the body systems and

asks about the presence of various symptoms. The developers say that the questions can be answered in approximately one-half hour.

The results of the Inner View personal health assessment are provided in an eleven page pamphlet. One page provides a personal health summary with an overview of health problems and symptoms, a lifestyle overview, and a health risk analysis. The HRA indicates the percentage chance of dying in the next thirty years of the five major causes of death, and risk reduction actions which, if taken, can lead to gains in life expectancy. The patient's actual age, the health age, and an achievable age are provided. Items needing referral are indicated. Those referrals requiring immediate attention are marked STAT.

The remaining ten pages review each of the four major sections and areas. A brief overview of the key concepts are discussed (lifestyle, habits, exercise, etc.) followed by the individual's personal results. Recommendations for change are provided and specific ways to accomplish these recommendations are discussed.

Individuals desiring to review the assessment or a sample of the results can contact National Computer Systems, 11000 Prairie Lakes Drive, P.O. Box 9365, Minneapolis, MN, 55440, 612-829-3000.

APPENDIX E

SUMMARY OF PILOT RESULTS

Demographics of the Pilot

N=14 Males=3 Females=11

Education

AD	BS	MS	some college	diploma
3	7	2	1	1

Race

Caucasian	Hispanic
10	4

Age

18-30	31-40	41-50	51-60	60>
2	8	2	2	0

Months Post Assessment

0-5 mo.	6-11 mo.	12-18 mo.
4	4	6

Questions 1-7

1. Why did you take the risk appraisal in the first place?

Education/ Information(6)

- 1) to obtain knowledge of risks- 4
- 2) for the program involved- 2

Evaluation (9)

- 1) to obtain values, labs- 2
- 2) wanted to see where they stood- 7

Motivation (5)

- 1) for some motivation- 5

-
2. What do you see as the purpose of a risk appraisal?
1) to identify areas for improvement- 10
2) get an idea of health standing- 9
-

3. How did you feel after getting the results of the risk appraisal?
Depressed- 1
Disappointed- 3
shocked, surprised- 3
what was expected- 3
good, pleased, surprised- 2
very good, very pleased, elated- 3
-

4. How were the results of the appraisal made available to you?
Received written report- 14
Reviewed in a group- 10
Reviewed individually- 1
Not reviewed- 1
-

5. Was getting the results this way of benefit to you?
All were happy with the way the results were handled except one individual who would have preferred individual consultation with more explanation.
-

6. Do you understand your results? yes- 14
Do you agree with them?
Only one individual disagreed with results and this was because he had input wrong data on cholesterol changing his overall picture.
-

7. Would you be willing to share your results with me?
yes- 14

Questions 8-10

-
8. Changes made:
Made changes- 11
Had made changes prior to risk assessment- 2
Made no changes- 1
Types of changes made:
dietary
weight loss
exercise
Maintenance of changes:
2 individuals did not maintain any of their changes (exercise and diet). Stopped at 1 1/2- 2 months.
1 said she fluctuated on her diet.
3 maintained diet and weight control but not exercise (lasted only 3 months).
6 maintained all changes at time of interview which varied from 5 months- 1 year.
-
9. Was there a person or persons who influenced you to make or not make a change?
no one influenced them but themselves- 5
no one influenced them- 1
self and others- 2
spouse- 3
peer/friends- 3
relative- 2
-
10. Has your place of employment influenced your health behaviors? If so how?
yes- 13 no- 1
positive influence- 6
negative influence- 7
Reasons identified-
influence of co-workers- 3 pos, 1 neg
sedentary job- 2
environmental factors such as poor ventilation- 2
increased stress- 3
habit restrictions- 1
changed jobs (decreased stress)- 1

Questions 11-14

-
11. Has there been an event or experience that helped you to change or not change your behavior?

yes- 11 (positive-9 negative-7) no- 1
 events identified:
 friend, self, etc. with medical problem
 reading getting married
 turning thirty being in the service

12. Do you feel money or lack of money had any effect on whether you did or did not make a change? or maintain a change?

no- 14 (two males said that perhaps having more money would allow them to join a spa or buy equipment to exercise)

13. Were there things available or not available to you that you feel helped you to change or hindered you from changing?

Available: peers

Not available:

exercise program at work
 lack of staff
 lack of time
 lack of a bicycle

Available and not available:

exercise equipment
 across the street from a lake, near YMCA

14. Are there other factors that helped you make a change or had an impact on you to maintain a change?

yes- 12 no- 2

Items not mentioned elsewhere in the interview:

concerned over personal appearance
 increased time since kids have grown
 leader support in fitness program
 healthy environment at work

Question 15

15. What are the personal characteristics or feelings about yourself which helped or hindered you from making a change? Maintaining that change?

Individual responses:

goal oriented
motivated
"stick-to-it-iveness"
projecting good image to the public
copes well with stress
has outlets
perfectionist
wants to be healthy
positive attitude toward health
personal appearance
fear about what can happen
wants to live a long time
likes feeling of achievement
likes feeling good about self
self-image
consistent
not influenced by others
feels she is a leader
not a priority
lack of motivation
too many other things to do
life stress event (ie, friends dying)
compulsive person
competitive
lack of internal discipline
using food as a reward
vanity
schizophrenic in regard to food
"tomorrow syndrome"
anything's a good excuse
companionship
needs a push
belief in her body's ability
gets drive" from other people
doesn't take a lot to be healthy
a little (consistently) can go a long way
laziness
snacker
doesn't organize time well
depression

APPENDIX F
REVISED INTERVIEW PROTOCOL

Date Interviewed:	ID Number:
Male/Female	Occupation:
Education: HS, College, MS, Doct.	
Racial Group: Cau, Black, Hisp, Other	
Age: 18-30 31-40 41-50 51-60 61 or Older	

Assessment: Doctor's Hospital	Date Taken:
Months Post Assessment:	

1. Why did you take the risk assessment in the first place?
2. How did you feel after getting the results of the assessment?
3. Did the information you received affect (help) you in any way?
4. Were changes made in . . . maintained . . . length of time. . . . ?
(diet, weight, exercise, smoking, drinking, stress level, other)
5. Has your place of employment influenced your health behaviors? If so, how?
6. Was there a person or persons who had an impact on you to make or not make a change?
(self, spouse, significant other, peer/friend, relative)
How?
Did anyone serve as a role model for you?
7. Has there been an event or experience in your life that helped you to change your behavior? Not change behavior?
8. Are there any other factors that helped you to change or had an impact on your health behaviors?
9. What personal feelings or internal things can you identify about yourself that helped you to make the changes? Or hindered you from making changes?

10. If you accomplished a change, what do you feel helped you the most? If you did not, what hindered you the most?
11. If you could be offered one incentive that would encourage you to change, what would that be?
12. Overall, do you consider yourself healthy or unhealthy? On a scale of 1-10, with 1 being unhealthy and 10 being the healthiest, rate yourself.

APPENDIX G

INTERVIEW DATA SHEET

Date Interviewed: ID Number:
 Date Interviewed: Occupation:
 Male/Female
 Education: HS, College, MS, Doct.
 Racial Group: Cau, Black, Hisp, Other
 Age: 18-30 31-40 41-50 51-60 61 or Older

Assessment: Doctor's Hospital Date Taken:
 Months Post Assessment:

1. Why did you take the risk assessment in the first place?
 - a. to obtain knowledge of risks
 - b. to obtain values, labs, measurements
 - c. already involved in some health practices and wanted to see where they stood
 - d. for some motivation
 - e. for the program involved
 - f.
2. How did you feel after getting the results of the assessment?
 - a. depressed
 - b. shocked, surprised (neg)
 - c. disappointed
 - d. what was expected
 - e. pleased, surprised (pos)
 - f. elated
 - g.
3. Did the information you received affect (help) you in any way?

How could it have been more helpful to you?
 or How would the results have meant more to you?
4. Were changes made in, maintained, length of time . . ?

behavior	made	maintained (+) (-)	time
a. dietary habits.....			
b. weight control.....			
c. exercise.....			
d. decrease smoking.....			
e. decrease drinking.....			
f. stress reduction.....			
g. other.....			

5. Has your place of employment influenced your health behaviors? If so, how?
 - a. co-workers (pos. or neg.)
 - b. sedentary job
 - c. environmental factors
 - d. increased stress level
 - e. habit restrictions
 - f. changed employment

6. Was there a person or persons who had an impact on you to make or not make a change?

	change	not change
1. self		
2. spouse		
3. significant other		
4. peer/friend		
5. relative		

How?

Did anyone serve as a role model for you?

7. Has there been an event or experience in your life that helped you to change your behavior? Not change behavior?

8. Are there any other factors that helped you to change or had an impact on your health behaviors?
 - a. interest in personal appearance
 - b. exposure to health related individuals
 - c. leader support
 - d. less responsibility
 - e. more time available
 - f.

9. What personal feelings or internal things can you identify about yourself that helped you to make the changes? Or hindered you from making changes?

10. If you accomplished a change, what do you feel helped you the most? If you did not, what hindered you the most?

11. If you could be offered one incentive that would encourage you to change, what would that be?

12. Overall, do you consider yourself healthy or unhealthy? On a scale of 1-10, with 1 being unhealthy and 10 being the healthiest, rate yourself.

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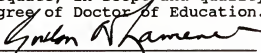
BIOGRAPHICAL SKETCH

Mary Catherine Smolenski was born August 19, 1950, in Greensburg, Pennsylvania, to Catherine and Steve Smolenski, the fourth of six children. She grew up in Jeannette, Pennsylvania, with five brothers. After graduating from high school in 1968, she attended the University of Pittsburgh, obtaining a Bachelor of Science degree in nursing in 1972. After working for a short period of time, she moved to Miami, Florida, and worked in the areas of critical care and nursing education.

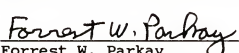
In 1978, she received a Master of Science degree in nursing from the University of Colorado in Denver, majoring in adult health. She moved back to Miami to continue teaching and became interested in the nurse practitioner role. After attending a program at the University of Miami in 1979-1980, she became a Family Nurse Practitioner. Teaching remained an interest, and the need to pursue further study became evident. She enrolled in a collaborative doctoral program in education between the University of Florida and Florida International University in 1981.

After six years of working full time as a nurse practitioner for the University of Miami/Jackson Memorial Hospital Medical Center, along with being a part-time doctoral student and a flight nurse with the Air Force Reserves on weekends, it was evident that more time had to be devoted to the degree if it were ever going to be completed. So, in May of 1987, she went on educational leave of absence to finish the dissertation. She is currently working for the University of Miami School of Nursing at the graduate level.

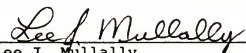
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Gordon D. Lawrence, Chairman
Professor of Educational
Leadership

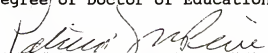
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Forrest W. Parkay
Associate Professor of
Educational Leadership

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Lee J. Mullally
Associate Professor of
Instruction and Curriculum

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.


Pat M. Pierce
Associate Professor of
Nursing

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Education.

December 1988

David B. Smith Jr.
Dean, College of Education

Dean, Graduate School